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### Ammunition Quarterly

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### *From the Program Manager*



**Mr. Jerry Mazza**  
Program Manager for Ammunition

As we prepared for publication of this spring edition, it was quite obvious to me that our OccField magazine has matured over these past years. Originating from our schoolhouse at Redstone Arsenal, Alabama many years ago, the "Ammunition Quarterly" has enjoyed a growing audience throughout the Marine Corps. Entering our tenth year in publication, I can't help but to believe that the growth of this magazine has broadened the knowledge and communications of our 2311's and 2340's, as well as those who have a vested interest in the ammunition and explosives that we all manage. Clearly, this has been the collaborative effort of the many professionals, from many organizations, that recognize the

the value of information. At a glance, one can see that contributors' articles span from the macro-level, to the more technical. We have seen in the past several editions, a tactical and operational influence from our community. And in this edition, you will enjoy reading about some of the many "joint" service efforts and how those missions' affect and impact on Marine Corps ground ammunition. LtCol Ratliff, my Liaison Officer (LNO) at the Joint Munitions Command (JMC), Rock Island, Illinois, shares with the reader the basics of ammunition procurement and many of the unique responsibilities his LNO staff execute. Captain Hansen of the Naval Ordnance Safety and Security Activity (NOSSA), Indian Head, Maryland, provides another unique, yet very critical explosives safety perspective of our joint mission. Continuing the joint focus, CWO3 Wilson, my LNO at the Naval Weapons Station, Yorktown, Virginia provides insight on his mission in supporting our operating forces. You will also find a very interesting contribution from our Marine Forces Europe Ammunition Office, Major Grabas which educates us on the diverse responsibilities of his position as well as the MARFORLANT Ammo Chief, MGySgt Benjamin's historical perspective of asset management.

Be it from a joint perspective, technical, operational, tactical, or general ammunition management, it is apparent that our mission is challenging. I view our magazine as a forum to educate and inform and, as opportunity to tell our stories and advertise our unique place in supporting our Marine Forces. Most importantly, I view this publication as a tool to enhance the growth of our future leaders. Today's Lance Corporals, Sergeants, and Staff Sergeants represent the body of future leadership within the ammunition community. They are my future LNO's. They are future MARFOR-PAC/LANT/EUR/RES staff. The Master Sergeants and Master Gunnery Sergeants, the Warrant Officers, Limited Duty Officers, and senior Ammo leaders. I hope that by using the Ammunition Quarterly to broaden their exposure to the many facets of ammunition management, we can augment their formal ammunition training as they grow and mature into ammunition technicians and ammunition officers. Our future stands before us, in every morning formation, in every Private who can potentially fill any ammunition billet in the future. In many ways, your contributions to this Quarterly magazine serve to nurture this young cadre of a special breed...our ammunition family. Semper Fi

# Marine Ammunition Experts Finish the Fight for Quality Ammunition at Rock Island Arsenal



**LtCol Ratliff, Marine Corps Liaison Officer, Rock Island Arsenal, IL**

With the exception of missiles and few items procured through Marine Corps Systems Command, the bulk of Marine Corps ammunition is procured through the Joint Munitions Command (JMC), Rock Island Arsenal, Illinois. The JMC is a subordinate command of the Army Field Support Command (AFSC), which is also a part of Army Materiel Command (AMC). AMC has been delegated primary responsibilities by the Office of the Secretary of Defense (OSD) as the Single Manager for Conventional Ammunition (SMCA), pronounced “smickuh” or “simkuh” by varying groups of people. The SMCA responsibilities are further delegated to the Program Executive Office (PEO) for Ammunition, located at Picatinny Arsenal. The PEO for Ammunition oversees procurement activities for the JMC in concert with the CG, AFSC and the CG, JMC. Although any one of these commands may be affectionately referred to as the SMCA, it should be noted that the SMCA is a function or responsibility and not a command.

Since the JMC serves as a procurement activity for all the Services, each Service outside the Army has a liaison office to oversee procurements for their Service and to provide assistance to the Army for Service-unique concerns. The Marine Corps Liaison Office is staffed with one Lieutenant Colonel, one Captain, one Master Sergeant, a Civilian Procurement Specialist, and a Civilian Supply Technician. Additionally, the liaison office is augmented by one Navy civilian Program Analyst from the Marine Corps Programs Department (MCPD), Fallbrook, California, who assists in Configuration Control Board (CCB) actions. Since wholesale management of Marine Corps assets is a responsibility of the Marine Corps Liaison Office, three

Staff Non-commissioned Officers are assigned as liaison officers to each of three depots in which Marine Corps assets are stored. These three depots are Crane Army Ammunition Activity (CAAA), McAlester Army Ammunition Plant (MCAAP), and Tooele Army Ammunition Depot (TEAD). And, since the AFSC has responsibility for movement of munitions from wholesale activities through the Joint Munitions Coordinating and Transportation Activity (JMTCA), the Marines have found it vital to have a Marine Staff Sergeant as part of the Army staff. In all, the liaison office is staffed to oversee procurements, funding, movement, and wholesale inventory management of Class V (W) at the SMCA depots. But, the most prominent function of the liaison office is procurement of munitions for the Marine Corps. This is accomplished in concert with the Ammunition Programs and Budget (AP&B) Division, Office of the Program Manager for Ammunition, Marine Corps Systems Command, Quantico, Virginia.

Procurement of ammunition is a critical function accomplished through a phased effort lasting months and, in some cases, years. Upon release of funding from the budget phase to the execution phase, the Marine Corps executes appropriate commercial and inter-service contracts to acquire ammunition, most of which is procured using a Military Interdepartmental Purchase Request (MIPR) through the SMCA.

The Marine Corps currently has 167 procurement MIPRs on contract with the JMC. These MIPRs have a total dollar value of over \$522 million. Delivery on these orders will be accomplished with 402 transactions totaling 58,279 tons of ammunition. The Marine Corps also has 51 renovation MIPRs on contract with a total dollar value of over \$13 million.

Upon receipt of a MIPR, an obligation against the Marine Corps funded budget is incurred, which becomes the contract between the Marine Corps and the JMC. JMC's acceptance of a MIPR creates a due-in for the Marine Corps which is posted in various JMC logistic and procurement systems. Each order is then monitored monthly, and status is provided to the Marine Corps Liaison Office of the Program Manager for Ammunition throughout the production cycle.

Upon completion of production, the Department of Defense (DoD) contractor representative accepts the ammunition and a DD Form 250 is forwarded to the JMC along with the ammunition lot data card and ballistics test results. The JMC inventory manager then

transfers the accepted ammunition to the Marine Corps in accordance with the shipping instructions contained in the MIPR. When the transaction is entered into the JMC's Command Commodity Standard System (CCSS) and forwarded to appropriate depots (McAlester, Crane or Tooele), the shipment and transfer of the designated ammunition is complete.

The final action consists of forwarding a receipt transaction back to the JMC, which in turn generates a billing transaction to the Marine Corps Comptroller, who in turn executes a disbursement of funds. After final delivery of all disbursements, the MIPR is audited for completeness, final billing is accomplished, and the order is then closed.

The process appears straightforward and efficient. In reality, it is very complex and time-consuming; with lead-times averaging 26 months for first delivery of ammunition once a funded MIPR is accepted by the SMCA. The Marine Corps Liaison Office continually monitors the process to mitigate any delays in production and delivery of Marine Corps ammunition. A crucial part of this is ensuring a quality product throughout the manufacturing process. Quality starts with the development of Technical Data Packages (TDP) by the Army Research, Development & Engineering Command (ARDEC), Picatinny Arsenal, who also have the responsibility for review of the TDPs prior to the JMC offering a contract solicitation. But their efforts alone are not enough to circumvent potential problems during the production process. After a contract has been awarded, the JMC Product Quality Managers (PQM) and MCPD Quality Assurance personnel must become involved to ensure that contractor processes comply with Marine Corps MIPR requirements and the contractual obligation to implement Statistical Process Controls. Careful review of contractor processes and procedures are the first

deliberate step in interfacing with production. Each phase of the production process must be reviewed to ensure that proper controls for personnel and Automated Inspection Equipment (AIE) are suitable and acceptable. Once the SPC plan has been approved, the contractor begins the first phase of production, designing his production to pass the First Article Acceptance Test (FAAT), a detailed inspection by MCPD, ARDEC, and PQM personnel. Upon passing, the contractor is free to enter Low-Rate Initial Production (LRIP). After that, another inspection is performed to ensure the contractor performance still meets contract compliance. Once in compliance, he is free to begin full production. This process is designed to ensure a quality product and must be continually monitored throughout the production run. Defense Contracting Management Agency (DCMA) Quality Assurance Representatives (QAR) are on hand to ensure contractors comply with the standards previously approved by the JMC and MCPD. Once production is met, the contractor must then prove his product by passing the Lot Acceptance Test (LAT) or the Ballistic Lot Acceptance Test (BLAT). Once this and all other contractor requirements are met, the product enters the acceptance phase. Seldom does a product enter production without the need for closer review and eventually some changes to bring materials or other outdated design processes up to modern standards. Whenever this occurs, contractors may ask for waivers or design changes that are acted upon in Configuration Control Boards (CCB), which undergo thorough reviews by JMC, ARDEC, MCPD, and other supporting agencies, and which in some cases can be acted upon separately by the Services. This comprehensive process is an essential part of the duties and functions of the Marine Corps Liaison Office, which are accomplished throughout the contracting and production process by participation in Integrated Product Teams (IPT), In-Process Reviews (IPR), Although both the JMC and the Marine Corps apply quality standards to ammunition, there remain varying degrees of quality and the manner in which it is applied. Resolving these differences to the satisfaction of the Marine Corps is an essential undertaking of the Marine Corps Liaison Office.

These efforts, while a daunting challenge, do not entirely convey the enormity of the Marine Corps' tasks until one considers the Marine Corps' portion of the SMCA pie in perspective. On average, the Marine Corps makes up about ten percent of the overall SMCA procurement workload. Of the other services, the Army is the largest, and Foreign Military Sales makes up the rest. If one weren't careful, it would be very easy to get





lost in the scheme of things-- with delivery delays being the result.

Another critical part of the SMCA/Marine Corps relationship that affects ammunition procurement is our stockpile management and workload forecasting. Stockpile management of the Marine Corps ammunition inventory within the JMC industrial base is accomplished by using a centralized distribution management plan, which is executed via the submission of a detailed workload forecast to the JMC on an annual basis.

The Marine Corps' workload forecast is consolidated with the other Service's and forwarded to Congress as a part of the Department of the Army's ammunition management budget. The detailed workload forecast is prepared for the Current Fiscal Year, Budget Year 1 and Budget Year 2. Summary planning forecasts by depot are provided for the follow-on four years of the budget cycle.

The detailed workload forecast is prepared in line detail for each depot storage site and is summarized by a materiel distribution forecast code. The materiel distribution forecast codes consist of numeric identifiers that group detailed requirements into an aggregate total that is expressed in general terms of tons issued and tons received. There are currently 35 materiel distribution forecast codes that identify requirements such as Continental United States (CONUS) assets, prepositioned assets, demilitarization assets, CONUS receipts, prepositioned receipts, etc.

The Marine Corps Fiscal Year (FY) 2004 forecast to the JMC totals 26,473 tons of ammunition. This forecast is critical because it is what the JMC uses to budget and allocate funding to the various depots to support all aspects of DoD ammunition life-cycle management. To understand this criticality, one needs to know that the JMC stores 74% of the total Marine Corps ammunition inventory or approximately 132,171 tons. The funding based on the Services' forecast is used to ensure the availability and maintainability of this ammunition for training and combat requirements.

Although the procurement and production processes are lengthy and complicated, they are nonetheless the crux of the fight to ensure a quality product for the Marine Corps. Invariably, the Marine Corps will insist on the highest standards possible and never waive anything that affects fit, form, or function of Marine Corps ammunition. While our fellow team

members start the fight for quality ammunition at Quantico, the Marine Corps Liaison Office finishes the fight at Rock Island.

**LtCol Ratliff, Marine Corps Liaison Officer,  
Rock Island Arsenal, IL**

## **Center Magazine Area (CMA) & Field Ammunition Supply Point 29 Palms California**



**CWO3 Liddell, Officer in Charge, Center Magazine Area (CMA), Marine Air Ground Task Force Training Command, Marine Corps Air Ground Combat Center**

Welcome to the Marine Corps busiest Ammunition Supply Point, Center Magazine Area (CMA), Logistic Division, Installations and Logistics Directorate, Marine Air Ground Task Force Training Command, Marine Corps Air Ground Combat Center, 29 Palms California. The Marines of the CMA have adopted the phrase "We move more ammo than anybody in the Corps!" This is not an idle boast considering that the CMA processes 1700 documents monthly and over 25,000 tons of ammunition (Class V (W & A)) valued at over 200 million dollars are moved through the CMA annually.



### **Ongoing Storage Operations**

This is equivalent to just under 50% of all class V(W) training ammunition that the Marine Corps uses CONUS in addition to a large amount of aviation ordnance expended each year. At any one time, the CMA manages and maintains 472 different ammunition line items weighing over 4400 short tons and valued at over 85 million dollars. This task is accomplished by a staff of one 2340 Ammunition Officer, one 6502 Aviation Ordnance Officer, forty six 2311 Ammunition Technicians, twelve 6521 Aviation Ordnance Munitions Technicians and six civil service employees. This is the smallest staff of any of the Marine Corps large ASP's. The CMA is located on 113 acres of pristine land in the high desert paradise of 29 Palms, CA. The CMA maintains 26 magazines, one inert warehouse, one portable magazine and one hardstand. The facility size is small and because of the large amount of ammunition needed for each exercise, the CMA is not large enough to hold all that is required for one complete CAX evolution. In an effort to upgrade facilities, MILCON P-683 has been approved for an additional 5 magazines and 2 hardstands. These new facilities will allow the CMA to eliminate the need for a N.E.W waiver for 6 of our magazines and provide better support for using units in the future.

The mission of the CMA is to receive, store, account for and issue all Class V (A) and (W) assets used by units training aboard MCAGCC. The CMA is unique because it is the only ASP in the Marine Corps that stores both air and ground munitions in quantities large enough to support a Marine Air Ground Task Force (MAGTF) level operations. To accomplish this feat, the CMA maintains two records sections, one for

Class V (A) records, which reports by Ammunition Transaction Reports (ATR) and Class V (W), which reports by Transaction Inventory Reports (TIRS). Due to the high volume of Class V assets that are processed by the CMA, it is not possible to segregate the ammunition handling and safety responsibilities by a Marines MOS. It is imperative to cross train both 2311 Ammunition Technicians and 6521 Aviation Ordnance Munitions Technicians. It is not uncommon to find a 6521 processing Class V (W) records transactions or to see a 2311 loading an LVS with one thousand pound bombs.



### **CAX Preparations**

Expertise in these two areas gives the Marines an uncommon sense of pride and self-accomplishment. The main focus of the CMA is to support the ten Combined Arms Exercises (CAX) conducted annually by First and Second Marine Expeditionary Forces and Marine Reserve Force. Each double CAX requires approximately twelve hundred tons of Class V assets. To prepare the ammunition for the CAX, two separate packages are built for issue to the Air Combat Element (ACE) and Ground Combat Element (GCE) and sent to the Field Ammo Supply Point (FASP). Each CAX package is comprised of over four hundred pallets of Class V assets prepared by the storage section. Over twenty-five trucks are loaded daily over a five-day period to transport the Class V assets to the Field Ammunition Supply Point (FASP) and Ordnance Issue Point located at Camp Wilson. After the final field movement is completed for the CAX exercise, the remaining ammunition is returned to the CMA where it is inspected, inventoried and repackaged for distribution to the next CAX. Two weeks after the final turn-in, the initial issue for the next CAX begins again and this

cycle continues throughout the year with the only extended break between CAX 2 and CAX 3. During this 3-week break, the CMA conducts its annual inventory.



### **MHE/Storage Operations**

The CMA Quality Assurance (QA) team which is lead by a civilian GS09, performs various surveillance functions regarding the safety and quality of operations involving receipt, storage, load, unload, maintenance, inspection, handling, packaging and shipment of munitions. This is accomplished using the most current policies and directives to determine effectiveness or applicability. The QA team maintains a complete library of the latest explosive and safety regulations and technical publications. The QA team is also responsible for identifying corrective action when improper storage methods or inherent deterioration of ammunition issues arise. All material handling equipment inspections are conducted by the QA team which include proper maintenance, weight testing and ensuring all equipment is in satisfactory condition prior to use. The QA leader is also a member of the CMA Qualification and Certification (Qual/Cert) Board and works closely with the Combat Center Explosive Safety Officer in the overall performance of the CMA.

The Ground Record Section, which is lead by a civilian GS09 is divided in to two sections: Inventory Accountability Management and ROLMS Technical Data Unit Sections. The Inventory Accountability Section is responsible for inventory accuracy between ground records and the storage section. This section continuously monitors and orders inventory to established stock levels, initiate cyclic inventories, process exercise issues and turn ins, perform causative

research to rectify discrepancies, utilize ROLMS for all daily activities and schedule incoming commercial ammunition shipments. The ROLMS Technical Data Unit Section is responsible for evaluation, analysis and processing all incoming requests utilizing various components of The Training Ammunition Management Information System (TAMIS). This includes maintenance of Naval Ammunition Reclassifications (NAR), Ammunition Info Notices (AIN) and Cleared/Not cleared for overhead fire listings while checking these notices against ROLMS and making proper adjustments as directed. This section also processes local unit field issues and returns and generates receipt documents for the Depots. Daily Transaction reports are checked and balanced; monthly inventory review reports are processed and researched. Finally, this section maintains files for issue and receipt documentation is well as Truck Checkers and Ammo Data Cards.

The CMA stays very busy and in addition to the 10 CAX operations, the CMA supports 2 Desert Fire Exercises and Steel Knight annually. During the Desert Fire Exercises, the U. S. Army has Multiple Launch Rocket Systems prepositioned at MCAGCC to conduct their training. This provides a unique training experience for both Marine Corps Ammunition Technicians and Artillerymen. Numerous other training exercises are conducted aboard MCAGCC by all branches of the U.S. Armed Forces and military units from throughout the world which with the continued help from the CMA, the entire spectrum of ammunition that can be fired, tested and used on the ranges at 29 Palms. The bottom line is that the CMA professionally and effectively supports all.

In a proactive approach to disseminate information to using units, Exercise Support Division MCAGCC hosts CAX conferences. It is standard practice for MAGTF S-4 Officers/Chiefs to visit the commodity areas to obtain any additional information. This approach provides an excellent platform to inform using units of the latest information and policy changes that affect the receipt, storage, use and transportation of Class V. This program significantly enhances the cooperation between support elements and using units. Additionally, CMA works closely with the Seventh Marine Regiment and Combat Service Support Group-10 to ensure that units stationed aboard MCAGCC receive outstanding support. As with all ASP's, safety is the primary concern at the CMA.





## Field Ammunition Supply Point Camp Wilson, 29 Palms

The CMA cannot function as a Field Ammunition Supply Point (FASP) for exercises as needed to train like in war. Dependent upon the size of the training exercise, the exercise force Combat Service Support (CSS) establishes a FASP and draws the total allocation for the exercise. If you find yourself homesick for the Iraq or Kuwait Theater, the closest thing stateside Marines can wish for is Camp Wilson, Marine Corps Air Ground Combat Center (MCAGCC). Since MCAGCC has been named as the premier training base for the Marine Corps, there is no doubt that Camp Wilson's FASP will become a popular stopping place for Marines well in to the future. The FASP is located on a 700-acre site approximately three miles northwest of Camp Wilson. The FASP consist of 5 rows with about 10 cells in each row.

The FASP supports ten Combined Arms Exercises (CAX) two Desert Fire Exercises, and Steel Night. The FASP can be divided into a 2 separate storage areas and can accommodate smaller operations that occur simultaneously with any ongoing CAX operation. This additional FASP is required to accommodate the volume of training conducted aboard MCAGCC without interfering with the CAX operations.

The FASP has a Sling Out Area, Staging Area, and separate storage section to allow for field storage operations to be conducted in the same manner as required in a theater of operations.

The FASP at Camp Wilson is vital for training Ammunition Technicians because Marine Corps

doctrine dictates that Marines should train the way that they will fight. CAX is the largest training exercise that the Marine Corps conducts making it the ultimate opportunity for Ammunition Technicians to hone their skills and prepare to support Combat Elements in time of war.

The FASP is also beneficial to MCAGCC and the Center Magazine Area (CMA). The CMA would not be able to complete routine operations and maintain the operational tempo required to support MAGTF units during CAX operations without the FASP. A FASP, by design, can support MAGTF operations more expeditiously than the CMA because it utilizes an open storage area, which allows material handling equipment, and vehicles unencumbered areas with which to work and it is able to support ammo operations 24/7. It is imperative that the FASP be prepared so that no Marine goes without ammo when required. The FASP in Camp Wilson is the ultimate place for Ammunition Technicians to hone their skills to support the Marines on the FRONT LINES!!!

**CWO3 Liddell, Officer in Charge, Center Magazine Area (CMA), Marine Air Ground Task Force Training Command, Marine Corps Air Ground Combat Center, [LiddellGS@29palms.usmc.mil](mailto:LiddellGS@29palms.usmc.mil)**

## Foreign Comparative Test (FCT) Programs for Ammunition

**Mr. Miller, MCSC-PM Ammo-IWA Team**

The Office of the Program Manager for Ammunition, Marine Corps Systems Command recently received funding from the Office of the Secretary of Defense (OSD) to execute to execute a Foreign Comparative Test (FCT) program on a 40mm High Explosive Dual Purpose cartridge. The technology being pursued under this program is a follow-on to the success the Marine Corps experienced in fielding the 40mm Mk281, Mod 0 Target Practice cartridge; also a successful FCT program.

So, what is all this "FCT Program" stuff? How does it work? Why are we doing this? Let's take a few minutes and explore the logic and the mechanics of an

FCT Program to see if we can answer some of those questions.

While all good Americans recognize that we are the world leaders in technology, we also recognize that other countries (especially several of our Allies) also have some darn good equipment. So what if we had a way to look at that technology, evaluate it against our requirements, test it out, and, if it works, buy it? What if we also had a way to obtain funding to conduct the evaluation? We do: It's the congressionally mandated Foreign Comparative Test (FCT) Program. This Program assigns fiscal and policy oversight to the Deputy Under Secretary of Defense (Advanced Systems & Concepts) whose purpose it is to test and evaluate non-developmental equipment that demonstrates excellent potential to satisfy Service requirements. The program tenet is to rapidly field quality equipment to our warfighters and contribute to international armaments cooperation.



**"User Evaluation of a FCT candidate cartridge",  
Mk281 fired from a Mk19 at Quantico**

Let's dissect those statements and take a closer look at how we execute a good FCT Program for ammunition. First, note that the item must be "non-developmental". That simply means it must already be developed and it must work. We find out about the various types of ammunition through a variety of sources including attendance at trade shows; briefings by industry representatives; market surveys; travel reports by our International Programs Office (IPO) representatives; and "word of mouth" from war fighters. Once we identify a potential source, the second step is to ensure that it actually has the potential to fill a requirement. This part can be plain frustrating. If we

can't identify an end user with a real need for the technology, we're quite literally 'dead in the water'. This is where we spend much of our time trying to keep the warfighter aware of the products that are available and motivating the correct person (command) to formalize a requirement. In the ammunition business, we can often use the new technology to replace a current item through a product improvement program (PIP). Once we have addressed the "big two" (non-developmental technology and a requirement), the competition for limited funds can begin. And it is competitive! The selection process takes about nine months, commencing with a summary proposal. The process includes a review of the summary proposal by the MARCORSYSCOM IPO. Once the MARCORSYSCOM FCT Coordinator has completed a review and approved the proposal for submission to the DON Summary Review Board, the PM Ammunition Project Officer prepares a briefing on the program. Key elements of this briefing include the demonstration of a clear and concise benefit to the warfighter; evidence that a NDI solution is readily available from an ally; and evidence of a commitment to procure the item if it proves as good as it's advertised. This third element (a commitment to procure) is extremely important in the selection process. As previously stated, the FCT program tenet is to "rapidly field" equipment that meets the warfighters requirements. Despite the title, FCT money is not available just to test; "test to procure" is the goal. Therefore, showing that procurement funding is available to execute is an important element. In addition, each program sponsor is expected to contribute a certain level of funding to execute the test program. If the proposed program makes it thru the DON Summary Board, the Project Officer will be expected to turn the summary proposal into a full-blown FCT Proposal. This process takes 60-90 days to complete and includes completion of formal market surveys; development of a cost benefit and savings estimate; development of an acquisition/procurement strategy; and development of the overall test and evaluation plan. The OSD FCT Office provides a list of "essential evaluation criteria" to assist in the preparation of the proposal. The Project Officer must strive to develop as strong of a proposal as possible in order to successfully compete for the limited funds.

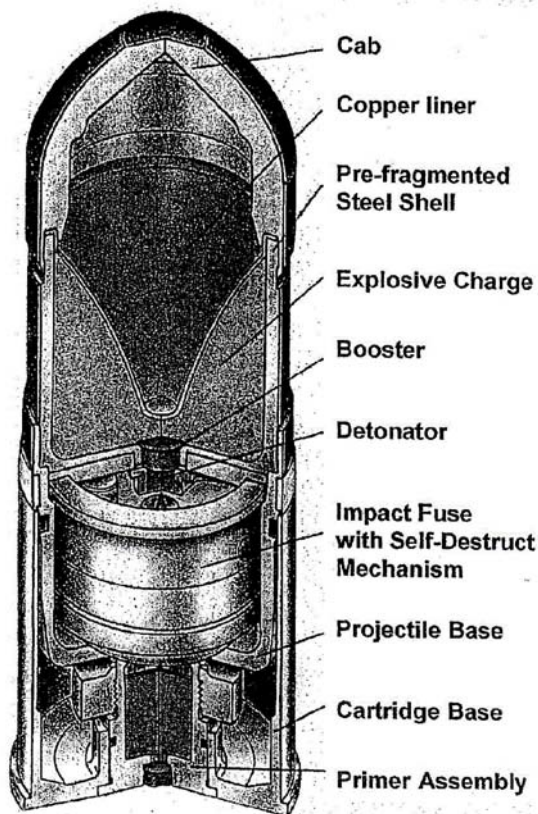
Once completed, the FCT Proposal is submitted and briefed to the DON Review Board. If successful, the program is submitted to Congress as recommended for funding. Once approved, the successful program Project Officer's are briefed and funding is provided for



execution. Now we simply execute the plan that we proposed. Right!

Key to program execution is proper documentation of the comparative testing. Of course, life is much simpler if you only have one potential source; that's termed an "evaluation" rather than a "comparative test". If two or more foreign sources have been identified care must be taken to ensure all of the sources are evaluated to the same criteria and that the best source is selected. In addition, if a domestic source has been identified during the process, the Program Office must evaluate that product with their own funding and not with OSD FCT funds.

## 40 mm x 46 Grenade Ammunition

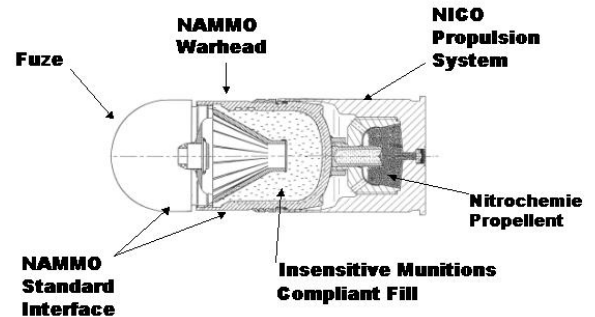


### 40mm x 46mm Grenade awaiting induction into the FCT Program

Once the down-selection to the final vendor has been completed, the proper authority must make a procurement decision. As with any other DoD procurement program, this decision is based on the ability of the item to meet the baseline requirements

(performance, schedule, cost) that have been established.

## 40mm HEDP PIP



### 40MM HEDP PIP currently in the FCT Program

If approved for procurement, each ammunition item must go through the appropriate safety and environmental testing, including Insensitive Munitions testing. If the testing is successful, the item will be recommended for fielding in the same manner as any other ammunition product. Of course, there is always the seemingly endless stream of paperwork. In addition to the normal documentation, the FCT Program Office requires periodic progress reports, financial statements, and a closeout report. However, documentation on any program is recognized as a necessary part of the process if we want to continue to spend public money to equip the warfighter. So, we all do paperwork.

One additional comment is necessary to clear the air about something you may have heard about FCT programs: They are not intended to simply "buy foreign". As a matter of fact, much of the ammunition being procured (or currently being tested) will be transitioned to the US for full-rate production. The FCT Program is, as stated, designed to look at equipment used by our Allies and evaluate whether or not that equipment will provide an added capability to our warfighter quickly and cheaply. And they work very well.

Mr. Miller is currently assigned to the MCSC-PM Ammo-IWA Team and may be reached at DSN: 378-3154 e-mail: [MillerRM@mcsc.usmc.mil](mailto:MillerRM@mcsc.usmc.mil)

# **“LINE OF THE FUTURE” 120MM Tank Ammunition Production Iowa Army Ammunition Plant**

**Mr. Kamrath, Project Manager, American  
Ordnance, Iowa Army Ammunition Plant**

In the early 1980's the U.S. Army selected the Iowa Army Ammunition Plant (IAAAP) as the Load, Assembly, and Pack (LAP) site for its newest tank ammunition, the 120MM family of rounds. The IAAAP is a Government Owned Contractor Operated (GOCO) facility located on 19,000 acres in the Southeast corner of Iowa. The operating contractor is American Ordnance, formerly Mason & Hanger Corporation (MHC). The US Army contracted with MHC to develop, design, and facilitate for the production of 120MM tank ammunition.

There were four (4) different rounds that the facility was initially designed to produce. These included both the tactical and the target practice rounds. Over time, the basic items have been improved to keep up with the latest threat, provided the user with enhanced lethality, reduced production and life cycle cost, and improved performance. Today the IAAAP is the sole producer of 120MM tank training ammunition in the U.S. and is the only producer that possesses the capability of producing the entire family of 120MM rounds.

The majority of 120MM tank rounds produced at the IAAAP are for training of Army and Marine tank crews to ensure that the U.S. Military is in a state of constant readiness for military threats throughout the world. Smaller numbers of tactical rounds are produced and stockpiled in case such a threat emerges.

## **What is the Line of the Future?**

The “Line of the Future” concept was borne from a culmination of years of process studies searching

for better and more efficient ways to produce 120MM cartridges. The “Line of the Future” involves streamlining operations and incorporating state of the art controls in the system for enhanced quality, reduced risk of injury and greater throughput with the same operating crew.

120MM Tank cartridge prime contractors, Alliant Techsystems and General Dynamics-Ordnance Tactical Systems (formerly PrimeX Technologies) worked with American Ordnance to analyze the possible upgrades to the production equipment. Once the needed equipment upgrades were agreed upon, the package for the “Line of the Future” was presented to Operations Support Command located at the Rock Island Arsenal (formerly Joint Munitions Command).

The “Line of the Future” took effect in two phases. Phase one involved the relocation as well as the enhancement of cartridge bonding equipment to a more efficient location, in line with the assembly of components needed for bonding. The second phase involved the relocation and enhancement of the propellant loading and primer insertion operations as well as the enhancement of the final assembly and pack-out operations.

## **Phase 1**

Relocation of the bonding line had several constraints. The building infrastructure needed to be upgraded; a design for the automatic application of adhesive, and a computer controlled curing cycle needed to be installed with minimum impact to production schedule and budget.

The projectile assembly and the projectile cartridge case assembly are bonded together with a nitrocellulose adhesive. The assemblies have nitrocellulose adhesive applied to the skive joints and are mated together. The mated parts must have pressure applied for a minimum of two hours. After two hours the parts are removed from the bonding line and are ready for the propellant loading operation.

Once parts have completed the projectile assembly requirements the assembly is transferred to a projectile adhesive application machine. The machine locates the adhesive dispensing head on the projectile case adapter skive.



The adhesive application machine controls the rotation of the projectile assembly and applies a volumetric bead of nitrocellulose adhesive around the skive. The machine locates the adhesive application head on the assembly skive, rotates the assembly and applies a volumetric bead of nitrocellulose adhesive.



Before the application of adhesive was done by an operator. The operator would manually rotate the part and smear the adhesive onto the skives of each assembly. This created a great deal of variation in the strength of the joint.

After the application of the nitrocellulose adhesive, the operator using a lift assist device transports the projectile assembly to a bonding fixture. At the bonding fixture the parts are mated together and have constant pressure applied to the mated assembly by a bonding clamp. Excess glue is wiped from the joint by the operator and the assembly is ready for the curing cycle. Once the bonding fixture is filled, the operator releases the fixture to the curing conveyor. The design

incorporated upgraded bonding fixtures. The fixtures are made of aluminum and have two alignment blocks for each bonded cartridge.



The bonding clamps lead to a more repeatable force. A Radio Frequency data tag is attached to the top of each bonding fixture. As the fixture conveys from the bonding station a RF data tag reader logs the fixture number and time entering into the curing cycle. At the end of the curing cycle, another RF data tag reader reads the data tag and the computer compares the time interval for the curing cycle. The computer will not activate the stop until the time has reached 120 minutes of elapsed time.

The "Line of the Future" curing oven also increases the bond joint strength. Bonded cartridges that completed the two-hour cure time on the previous equipment required extreme care during the unloading of the bonding fixture, as the bond joint was not fully cured. The pull strength of the bond joint rose from increased after the two-hour cure time with the addition of the curing oven.





After bonding fixtures are conveyed through the curing oven and have completed the two-hour cure time, the bonding fixtures are released to the unloading station. At the unloading station, each cartridge is serialized with a unique number and stamped with the cartridge lot number.

With the relocation of the cartridge bonding equipment, Epoxy component painting, projectile cartridge case assembly, projectile assembly and cartridge bonding reside in the same building. All cartridge assembly operations are complete prior to the loading of energetics. By moving the bonding operation out of a building where energetics are present, the numbers of operators exposed to energetics are reduced. Also the material handling of the assemblies is reduced. In the old system, both projectile assemblies and projectile cartridge case assemblies were transferred by fork truck to the bonding operation in another building. Now only the bonded cartridge is transferred to another building by fork truck reduced by half the amount of material transferred out of the assembly operations building.

## **Phase 2**

Installation of an enhanced propellant loading and primer processing and pack-out system, like Phase 1, would require infrastructure upgrades and minimum production downtime during installation. Phase 2 goals included having the following operations automated: cartridge weighing, propellant dispensing, propellant weighing, propellant loading, primer inspecting, primer insertion, final assembly inspecting. Other Phase 2 goals were computer controlled process and machine controls with data acquisition, tracking and archiving.

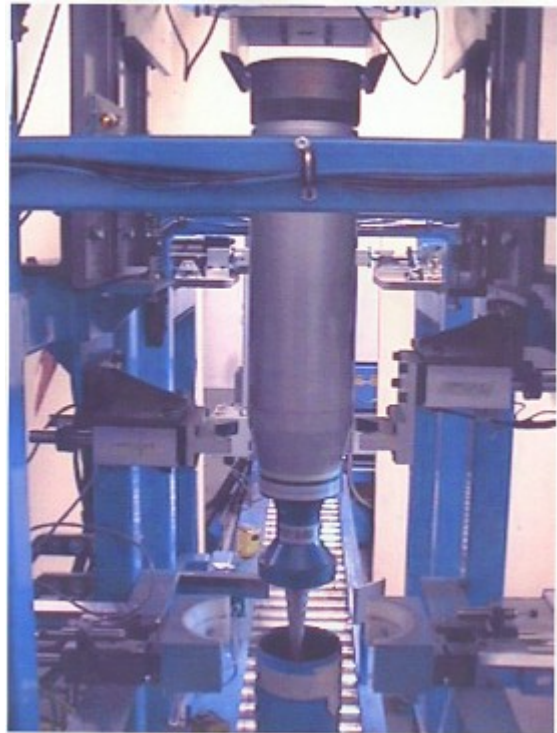
To handle, inspect, weigh and load the propellant, an environmentally controlled area was needed. The propellant required for the M865 and M831A1 are hygroscopic. Propellant can only be exposed to ambient conditions for up to 30 minutes. A controlled room was built to house the propellant operations.

The bonded cartridge will arrive at the loading station prepared for propellant loading. At the beginning of a production run, the production supervisor enters on a computer menu which type of cartridge will be produced (M865 or M831A1), which prime contractor the production is for, the cartridge lot number and work order number for the production. This

information is transferred to the data tag for each individual cartridge.

After the operator acknowledges the loading of the cartridge the pot will convey to the next operation. For a M865 cartridge the propellant container must be bloused prior to propellant loading. An operator will blouse a M865 to make sure the propellant container is not torn, twisted or caught on the penetrator fin. The operator acknowledges the successful blousing of the cartridge and that information is transferred to the RF data tag. M831A1 cartridges will be recognized by the information on the RF data tag and will bypass this operation.

At the next station the empty bonded cartridge will be weighed empty. If the bonded cartridge is acceptable a station specific acceptance code will be written to the RF data tag. A non-conforming bonded cartridge will prompt the station to send a station specific reject code to the RF data tag. The cartridge will bypass all operations until it reaches the unloading station.

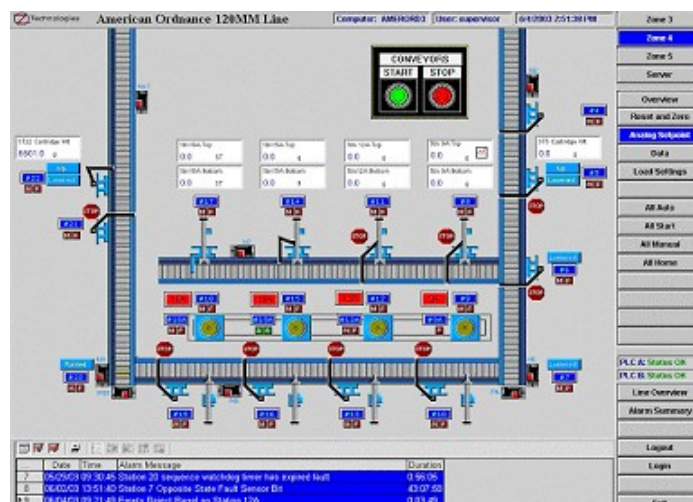


After the empty bonded cartridge has been weighed, the cartridge, if acceptable, will convey into a propellant loading station, located in the environmentally controlled propellant room. The propellant is received in drums, transferred into the environmentally controlled room, and vacuumed from

the drum into the propellant hoppers. From the first propellant hopper the propellant is dropped through a propellant screener. After screening the propellant moves through a metal detector. The in-line metal detector will automatically detect metal and remove it from the stream of propellant.

Each propellant loading station dispenses a volumetric amount of propellant into a weigh chamber. Individual propellant pieces will be added from a vibratory feeder as needed until the propellant charge weight is achieved. The weigh chamber is supported by two independent sets of scales. These scales continuously monitor the weight of the propellant charge when the weigh chamber reaches the propellant charge weight; the computer compares the charge weight against the acceptance parameters of the charge weight. If the propellant dispensing equipment supplies an overweight propellant charge, the computer will reject the propellant charge and the propellant charge will be transferred to an offline propellant barrel. If the propellant weight is within the acceptance parameters, the propellant will remain in the weigh chamber until a bonded cartridge is available for loading.

The automatic dispensing and weighing of propellant is a large jump in technology from the previous means of operation. Previously the propellant was dropped into a tare container (metal pots weighed to the same weight). An operator weighed the tare container and volumetric propellant charge, and added weight or subtracted weight by hand. The operator placed the acceptable propellant charge onto a conveyor where it would be checked in line by a check weigh scale. The propellant charge, if acceptable, would be conveyed to a loading operator. The loading operator removes the tare container from the conveyor and dumps the propellant charge into a funnel for loading into a bonded cartridge. Neither the propellant charge weight or propellant charge check weight are recorded. The weighing operations, and the loading operations are done in ambient conditions. Only 30 minutes was available for exposure to the propellant. If more than 30 minutes of exposure were seen multiple reworks of product occurred. One problem encountered with the tare containers is getting the containers to weigh the same. Lead shot was added to a sealed cavity to make the containers weigh the same when empty. However, the tare containers could wear from the friction of conveying, be dropped by an operator or have intrusion into the sealed cavity. If weight was added or reduced



in a tare container between calibrations, the empty weight would be different, and that pot could have a propellant charge that is outside of the acceptable parameters. Also the propellant dispensing and weighing equipment is a sealed system, so no foreign objects can intrude into the stream of propellant including metal.



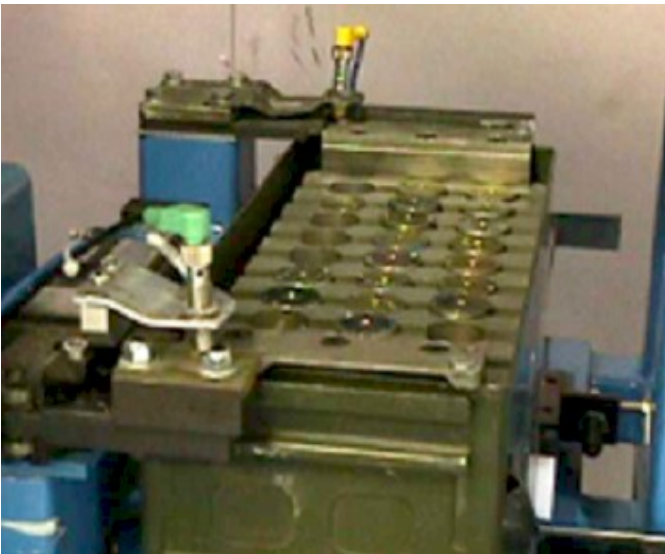
The next operation reads the RF Data tag for an acceptance code at the propellant loading stations. If a reject code is detected the cartridge is released and bypasses this operation. Upon reading an acceptance code, the cartridge will be weighed to ensure the entire propellant charge has been transferred to the cartridge. The loaded cartridge weight is written to the RF data tag as well as the acceptance or reject code.

At the next station the loaded cartridge will be conveyed into the primer insertion and torque machine. Primer boxes are loaded into the primer system by an



operator. The primers are automatically unloaded from the packing boxes into a rotating dial. The primer dial rotates the primer to inspection stations for primer length mark present, primer lot number verification, application and inspection of primer o-ring, and primer head to primer electrode resistance correct. After all primer inspections are successfully completed, the primer is removed from the primer dial and transferred to the primer insertion machine. If any of the primer inspections are non-conforming, the primer is automatically removed from the primer dial and placed in a non-conforming nest.

With the arrival of and acceptable cartridge and primer at the primer insert and torque station, both the primer and cartridge are clamped into place. The primer is rotated into the propellant bed through the primer hole. The insertion continues until the primer has been fully threaded into the primer hole. The machine then applies the required torque to the primer.

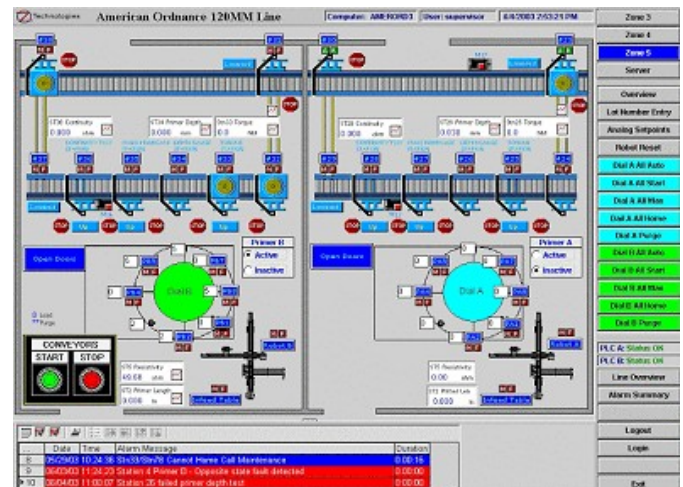


After the primer data and acceptance or reject code is written to the RF data tag, the cartridge is conveyed to the primer depth inspection station. An acceptable code prompts the inspection head to lower and center on the case base, an electronic plunger reads the primer head relative to the cartridge case base. The primer depth is compared to the acceptance parameters of 0.030-0.282mm below flush. The primer depth and an acceptance or reject code is written to the RF data tag. With the prior equipment this operation was automated, however no data was recorded.

The cartridge is conveyed to the next station and an acceptable code prompts the machine to lower and center the staking head onto the case base. The staking

machine stakes case base material into the primer head at the edge of the primer hole. If the machine performs acceptably, the acceptance code is written to the RF data tag. This machine is similar to the stake machine used prior operations.

The cartridge is conveyed to the last automated final inspection machine in the primer systems. If an acceptable code is detected, the continuity machine lowers and centers the inspection head onto the case base. The continuity machine inspects the continuity resistance between the primer head and cartridge case base. The reading is compared to the maximum



resistance requirement of 0.1 Ohms. The continuity resistance as well as an acceptance or reject code are written to the RF data tag. This machine was automated in prior operations however no data was recorded.

The next station is a manual station needed only for the M865. The operator will remove the sabot clamp. The sabot has a clamp around the saddle that must be removed prior to packing the cartridge into a metal can. When the cartridge is conveyed to this station the RF data tag is read and if the cartridge is an M865 and has an acceptance code, the station will wait for operator input. The operator raises the cartridge out of the conveyor pot with a lift assist, removes the sabot clamp with a pneumatic wrench, and lowers the cartridge back into the conveyor pot. The operator then places the sabot clamp into a funnel that drops into a bin, and presses a foot pedal switch to acknowledge completion of operations. The station will not release the cartridge unless the sabot clamp is detected by a presence of clamp sensor in the funnel and the operator depresses the foot pedal switch. When both of these operations have been completed the station will write an



acceptance code for this station and convey the cartridge to the next station.

The final cartridge weigh station will automatically weigh the cartridge. The RF tag is read, if an acceptance code is detected, the cartridge will be raised out of the conveyor pot and weighed. The inspected weighed will be compared to computer acceptance limits. The cartridges have a maximum weight limit of 24 kg. If the inspected cartridge is within limits an acceptance code and the weight will be written to the data tag.

After completing the final cartridge weigh operation the cartridge will convey to the chamber gage queuing station. The RF data tag is read and if a reject code is present, the cartridge will be diverted away from the chamber gages to the unloading station. If the cartridge has an acceptance code, it will convey into one of two chamber gages. Using a two-hand switch the operator activates the hydraulic insertion arm. With the



cartridge inserted, the operator slides a breach plate across the case base of the cartridge to ensure that that cartridge is fully inserted. The operator extracts the cartridge from the chamber gage. Attached to the extraction handle is a torque snap-wrench. This ensures that the cartridge is able to be extracted with less than the maximum required extraction force. The operator checks the round for visual, and workmanship defects as well as an acceptable stake mark. The operator removes the cartridge from the chamber gage. While the operator is completing the chamber gage operations, the empty conveyor pot is conveyed around the chamber gage and waits for the cartridge at the chamber gage exit station. The operator places the cartridge into the pot. The operator identifies the cartridge as an acceptable or failed chamber gage round with a computer touch screen. If a cartridge fails the chamber gage operation, a sheet magnet that identifies the round as non-

conforming, is placed on and covers the entire cartridge case base. The acceptance or reject data code is written to the RF data tag and the round is conveyed from the chamber gage operation to the pack-out operation. For safety reasons only one cartridge is allowed inside each chamber gage at a time. The computer will not release a second cartridge into the chamber gage until the in-process cartridge has passed through the exit of the chamber gage.



Metal can sets on pallets are conveyed to one of two pack-out stations. Each metal can set contains 30 cans for packing individual cartridges. Each metal can set is serialized by cartridge lot. The metal can sets are the final packing material shipped to the field. When the cartridge arrives at the pack-out operation the RF data tag is read, if an acceptable data code is detected the station prompts the operator to enter the bonding serial number, metal can set number, and the individual metal can location number. The operator inspects the cartridge for workmanship defects and if acceptable inserts the cartridge into a metal can. Foam filler is inserted into the can and the can lid is installed. After the cartridge is inserted into the metal can the operator acknowledges the bonding serial number, metal can set number, and individual metal can number.

Once the operator verifies the input information, the cartridge data is downloaded from the RF data tag and transferred to a database. All inspection information, empty cartridge weight, propellant charge weight, etc. as well as pack-out information, and a computer time stamp is downloaded into the database. Empty conveyor pots are conveyed back to the loading station.

Once 30 acceptable cartridges have been packed into a metal can set, the operator uses the controls system to convey the metal can set to leak test station. At the leak test station each metal can is leak tested. After an acceptable test, air test screw is installed and torqued into the lid. When all 30 metal cans have completed the operation, metal can set is removed from the conveyor and is stored for shipment.



The design of the Phase 2 equipment is non-linear and includes multiple propellant loaders, primer systems, chamber gauges, and pack-out systems. The non-linear design allows for cartridges to bypass operations if the cartridge is non-conforming. This allows for the machine uptime to be more efficiently used. The multiple machine design allows production to continue, even if it is only at a reduced rate. If one propellant loading station were to experience mechanical failures the other propellant loaders would not be inhibited from receiving or releasing cartridges. This allows the schedule attainment impact for mechanical downtime to be less.

### Benefits

- 1) The streamlining of operations means a 50% reduction of material handling, i.e. lifting and pushing, which will have a direct result on the injury rate for the operations. The reduced number of operators exposed to energetics also is a significant safety gain.
- 2) Increased automation and new equipment will lead to even greater quality of the end item which will provide the troops with more accurate ammunition leading to reduced training time and enhanced readiness of our troops for battle.
- 3) The cooperation of Operations Support Command, ARDEC, Alliant Techsystems, and General Dynamics-Ordnance Tactical Systems enabled American Ordnance to keep the 120MM tank ammunition manufacture on the journey to excellence.

**Mr. Kamrath, Project Manager, American Ordnance, Iowa Army Ammunition Plant**

# Ammunition Logistics Focus Team 2<sup>nd</sup> Quarter FY04 Meeting

CWO5 Patterson, Redstone and Mr. Banks, CACI

The Ammunition Logistics Focus Team (ALFT) conducted its 2nd Quarter FY04 meeting from 18-20 Feb 2004 in Fredericksburg, VA. The ALFT is chartered to identify, develop, and promote Iterative Transformation Initiatives (ITI) for the Marine Corps Ammunition community and to serve as ammunition (supply class V (W)) transformation catalyst and forum to address ammunition issues related to: Logistics Enterprise Integration (LEI); Policy review and development and Naval Logistics Integration (NIL). At the conclusion of the meeting the ALFT Chair published meeting minutes as well as working group product development to the PM Ammo web page located at: <http://www.marcorsyscom.usmc.mil/am/ammunition>

The meeting began with a general discussion guided by Senior Advisory Council (SAC) member Mr. Zarnesky. The main topic of the discussion was the five Major Functions of the Logistics Operational Architecture (OA) shown below.

- R** • Request Management: Function of generating and approving customer demands.
- O** • Order Management: Function of routing, coordinating, tasking, and tracking customer orders through to fulfillment.
- C** • Capacity Management: Function of managing, optimizing, prioritizing, and planning resources and capacity to fulfill customer demands.
- P** • Production Management: Function of coordinating, planning, tasking, and controlling how customer demands are fulfilled.
- E** • Execution: Function of executing CSS tasks to fulfill customer demands.

The ALFT applies these principles to all ITI under consideration. The relationship between the "Supported Unit and the "Supporting Unit" are fundamental to the OA and the characteristics of the functions change depending on the level of the organization. The opening remarks concluded with further discussion on the process to be adopted by the ALFT to address and promote ITI that have matured to implementation.

The ALFT then broke down into four working groups tasked with the following topics / ITI: ALFT

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Management, TAMIS-R Implementation Update, Inventory Accuracy (IA) Development, and Publications. The results of each group are detailed below.

## ALFT Management

- a) POAM/CHARTER. The ALFT charter was originally published as part of the Plan Of Action and Milestones. The ALFT Chair directed that the charter be a separate stand-alone document to facilitate its use and prepare it for staffing. When adopted both documents will be posted to the PM Ammo web page.
- b) MCWP 4-11.XX (Draft), Ammunition Logistics. This is an initial effort to produce a Marine Corps War-fighting Publication dedicated to Class V (W) and (A) logistics policy in one volume. All sections of this effort will require significant input and feedback from the operating forces to ensure it reflects current operational tactics, techniques and procedures. Look for updates and additional information on the PM Ammo Website as this ITI matures.

## TAMIS-R Implementation Update

TAMIS-R has undergone significant changes since first fielded in OCT 03. These changes are a result of the cooperative effort of the TAMIS-R Program Manager and the vendor to accommodate Marine Corps requirements. Additional design enhancements are forthcoming that are expected to substantially improve the TAMIS-R user experience. ALFT members and command representatives from II MEF discussed these issues at length and produced a set of business rules for TAMIS-R use and management that will be included as a reference in the revision of chapter 7 of MCO P4400.150E discussed below.

## Inventory Accuracy Development

A Proposal was initiated to develop, test and implement a Physical Inventory Control Program (PICP) that would utilize "Statistical Process Control" mechanisms to both improve inventory accuracy and reduce administrative workload at the supporting ASPs. This proposal will be reviewed, refined, and submitted for consideration at the next ALFT meeting.

## Publications

The Publication Working Group was focused on reviewing draft revisions of several policy publications in order to update and align the guidance contained in these ammunition directives with the Logistics Operational Architecture (OA) and its associated five major functions. The directives under review include:

- a) MCO P4400.39H, War Reserve Materiel Policy Manual. This manual requires substantial revision of Chapter seven on Class V (W) and other sections as well that are affected by recent DOD policy changes with respect to ammunition.
- b) MCO P4400.150E, Consumer-Level Supply Policy Manual. The proposed revision will update chapter seven to reflect the policy only in concert with how the Logistics OA applies ammunition business at the consumer level. It also recognizes the integration of TAMIS-R in consumer-level business practices. It has been condensed to reflect overarching policy only. Detailed procedural information that is currently contained in the manual will be replaced with an URL link to the PM Ammo website. This approach will facilitate the update and revision of procedures to reflect changes in technology and keep the procedures current.
- c) MCO 8000.8 (DRAFT), Marine Corps Munitions Requirements Process (MCMRP). This document is intended to replace MCO 8000.7, Marine Corps Capabilities Based Munitions Requirement Process (CCBMR), and reflects changes recently imposed by DOD policy, Changes in terminology, and changes in how the policy is implemented. This document will have a significant effect on how acquisition of ammunition is planned and executed as well as how ammunition is provided to the operations forces for training and contingency operations.
- d) MCO 8010.1, Class V (W) Combat Planning Factors (CPF). The current edition of this order is outdated. The CPF contained therein are being revised. Policies and procedures for the application of the CPF to deliberate planning by the operating forces have been updated as a result of DOD policy changes. The proposed revision will update the order to reflect the new



policies. The CPF, along with procedural information, will be extracted and republished as a MCBUL in the 8010 series. The new bulletin will be published as a companion document to the revised MCO 8010.1. The new MCBUL 8010 will be updated annually in concert with the development of the Marine Corps Total Munitions Requirements (TMR).

Overall the meeting was very productive and achieved its intended goals. The future of the Ammunition community is served well by the forum the ALFT provides and all are encouraged to participate in the process. Please provide feedback and comment to any ALFT member. More information on the ALFT and OA is available on the PM Ammo website.

**CWO5 Patterson is currently OIC of the Marine Element located at Redstone Arsenal, AL., and Mr. Banks is currently assigned with CACI in support of PM-Ammo-IMSD**

## Zero Arcs Storage

**Ms. Smith, MCSC-PM Ammo, EES Team**

A container with “Zero Quantity Distance” approved for use by the Department of Defense Explosives Safety Board (DDESB). No way. The Navy and Marine Corps regulations’ shows we need at least 1250 feet from the point of detonation of any 1.1 high explosives. No one wants to be standing near it when the high explosives go off.

What space age technology could mitigate sympathetic detonation and reduce Explosives Safety Quantity Distance (ESQD) Arcs to zero? The answer is pumice.



**Pumice**



**Pumice Cross Section**

What is pumice? Pumice is not some space age technology substance developed in a lab somewhere.

Pumice is naturally occurring foamed volcanic glass from granitic volcanoes. It is a highly porous volcanic glass with a matrix primarily composed of silicon dioxide (SiO<sub>2</sub>). The silicon dioxide forms thin membranes between closed cells of air, acting as a strong silicon sponge with 60-70% closed air voids.



**Zero Arc Storage**

Pumice works to mitigate sympathetic detonation by two mechanisms—the compression of the closed air voids in the pumice matrix, which makes up 60 to 70 % of pumice, and the shattering of the silicon matrix accounting for the other 30 to 40 %. This mismatch portion of the air voids and the silica attenuate the shock as it passes through the material. An additional benefit of the air voids is the low thermal conductivity providing thermal protection against extreme heat and flames.

The idea of trying to mitigate the sympathetic detonation has been around for a long time. The Ordnance Evaluation Branch of the Naval Air Warfare Center Weapon Division (NAWCWD), China, Lake, CA began investigating methods of mitigating sympathetic detonation since 1986 with a great deal of success. In 1992 a test was performed in response to the Navy’s EOD personnel requirement for a readily portable magazine capable of storing hazard classification 1.1 explosives with a zero ESQD arc. The test was successful and resulted in the DDESB

authorizing the use of this technology throughout the Navy and Marine Corps.



### Zero Arc Storage after internal explosion

This technology is in use today by Marines; just ask CWO5 Miller and MSgt McClung Explosives Ordnance Disposal Technician with Headquarters & Headquarters Squadron, MCAS Miramar. They recently ordered for their use an Explosive Ordnance Disposal Ready Service Lockers (EODRSL) developed by NAWCWD, China Lake. Modifications include additional venting and seven special pumice-lined containers to limit the Maximum Credible Event (MCE) in the magazine to 0.625 pounds Net Explosives Weight (NEW). A 30- foot clear area is required around the EOD RSL, within which no permanent personnel are permitted. Further testing in October 2000 resulted in DDESB approving the use of additional eight pumice-lined container for the storage of no more than 10 explosives-loaded enhance 1.5 liter Mineral Water Bottle (MWB) tubes and/or standard 1.2 liter MWB tubes. The MCE remains unchanged.

Another container ready for use by the fleet is the Advanced EOD Magazine, which was developed by NAWCWD, China Lake, CA for the Air Force EOD. This design satisfied the need to deploy explosives storage magazines with a minimal ESQD. An ARMAG Corporation magazine modified with additional venting and 17 special pumice-lined containers (for storage of HD 1.1 and 1.3 AE) to limit the MCE in the magazine to 1.25 NEW of C-4. HD 1.4 items are stored within metal containers on the internal expanded metal shelves.

The maximum NEW permitted in the magazine is 128.24 pounds. EOD kits are divided into two magazines with a 10-foot clear area, which no permanent personnel are permitted. NAWS China Lake Test Report NAWCWD TM8331 defines all conditions and modifications associated with use of the Advance EOD Magazines.

Additional information on zero-arc magazines and other approved protective construction for explosive can be found in DDESB Technical Paper 15, 2 February 2001, NAWCWPNS TM 7979, Pumice Technology Tests of Ready-Storage magazines for EOD Quick-Response Explosives Kits, by Carl C. Halsey, Sharon L. Berry, and Robert A. Currier, Ordnance Evaluation Section, Energetic Materials Branch, February 1996, and NAWCD TM 8331, Advanced Explosives Ordnance Disposal (EOD) Pumice Container Storage System, by Carl C. Halsey, Sharon L. Berry, and Robert A. Currier, Ordnance Evaluation Section, Energetic Materials Branch, January 2001, Naval Air Warfare Center Weapons Division, China Lake, CA 93555-6100.

**Ms. Smith, is currently assigned to the MCSC-PM Ammo-EES Team and may be reached at DSN: 378-3151 e-mail: [SmithAR@mcsc.usmc.mil](mailto:SmithAR@mcsc.usmc.mil)**



## Where's My Ammo!

### WO Wisneski, Joint Munitions Transportation and Coordinating Activity

Have you ever wondered how your ammo gets to your ASP or Outside Continental U.S. (OCONUS) location? Here's the best-kept secret in the Marine Corps--the Army ships it to you. That's right! The Army Field Support Command (AFSC), Rock Island Arsenal, Rock Island, Illinois has responsibility for the movement of munitions from wholesale activities through the Joint Munitions Transportation and Coordinating Activity (JMTCA).

So how does this process work to move a regular training requirement? After your requirement is routed through your chain of command and through Marine Corps Systems Command Office of the Program Manager for Ammunition (MARCORSSYSCOM PM Ammo), it is then passed to the Marine Corps Liaison office at Rock Island Arsenal for sourcing to one of four depots—Crane, Indiana; McAlester, Oklahoma; Tooele, Utah; or Hawthorne, Nevada, with the first three holding the preponderance of Marine Corps assets. After the document is sourced to the depot, the ammunition is prepared for shipment.

If the requirement is for the Continental U.S. (CONUS), the depot ships the assets in the most cost-effective way available, whether that is by combining service loads or by using stop-off loads (with multiple stops on one truck). Sometimes dromedary (DROM) shipments are the most cost-effective. In any case, the average cost for a normal CONUS move is approximately \$300.00 per ton, but can increase up to \$700.00 per ton. So, although we may sometimes save money by consolidating loads, we may also lose by missing the Required Delivery Date (RDD) and adversely affecting “HOT” real-world requirements.

If your requirement is for an OCONUS shipment, the procedures change. Due to cost and funding constraints throughout the Services, there are very few ammunition vessels that travel to the Far East or Hawaii. Consequently, the process can sometimes take up to a year to move ammo to OCONUS locations for training. In order to achieve the most efficiency, the requirement is sourced to the depots where the JMTCA combines all Service requirements and builds a shipping plan. Requirements are then offered to Military Sealift Command for commercial movement or to the Navy for opportune lift. Once accepted for lift, the cargo is moved to the port for loading on the vessel and final movement to the destination. The time line for movement is based on multiple factors (i.e. RDD, total weight, compatibility, destination, etc.) all of which can determine how long it will take to get the ammunition. Costs associated with vessel movement for containerized movement are approximately \$7,500.00 per container for port handling and ocean sailing while those for break bulk movements are approximately \$500.00 per ton. Neither of these costs consider movement to the port.

Since vessel movements can be time consuming, another alternative is airlifting the cargo. Air shipment is the fastest way to move ammunition,

but also the most expensive. The process is basically the same as surface movement, with the depot receiving the requirement and the JMTCA monitoring the movement. However, movement by air can occur two ways, one by dedicated airlift--STRATAIR--and the other by supporting commander channel lift. The former case is much like renting a taxicab, while the latter is much like taking a bus. In this case, the taxi is controlled directly by the person hiring it and will take the passenger directly to where he wants to go, while the bus has routine routes and stopping points. The passenger must share the ride with other passengers. STRATAIR is more costly, but the guarantee of the assets arriving at the designated time is more certain. Assets moving via air channel must wait for space available to move and can often become frustrated at multiple nodes until they finally reach their destination. When moving assets via air channel, the depots must first offer the shipment to the Marine Corps Air Clearance Authority (ACA), Marine Corps Logistics Base, Barstow, California for movement into the aerial port. Air clearance authority is required to ensure a proper holding space is available in the explosives storage area at the aerial port. In the case of STRATAIR, pre-approval by the ACA is not required since the shipment can move directly to the APOE and be staged for loading aboard the aircraft. In either case, once the shipment is cleared into the port for airlift, the JMTCA tracks the shipment to its destination. Costs associated with airlift movement are approximately \$3.00-\$5.00 per pound depending on destination and weight. These costs do not include movement to the port.

Whichever method is used to move the requirement, the user would most likely want to track it to have personal assurances as to where it is. Here are a few systems used to track munitions movements:

Global Transportation Network (GTN) for air, land, sea  
<https://www.gtn.transcom.mil>

Single Mobility System (SMS) for air  
<https://sms.transcom.mil>

Intelligent Road-Rail Information Server f/Land  
<https://www.irris.tea.army.mil/>

HELMS report (SIPRNET) f/Sea  
<http://www.msc.navy.smil.mil/>



Each of these systems requires special access and the appropriate clearances, but they are invaluable in the movement and tracking process.

Some people say, “Nothing happens until something moves”. This was how your ammo moves, and these are ways to track where your ammo is. The next time you’re wondering where your ammo is, you might first consider where it comes from and then remember all the mechanisms used to get it to you and all the people involved to make it happen. When it comes to moving ammo to you, the JMTCA is there to make it happen.

**WO Wisneski is currently assigned to the JMTCA at Rock Island Arsenal**

## Ammunition Readiness Status

### Mr. Steinhardt, Systems Team Support

In February 2004, the Systems Team released the Ammunition Readiness Status (ARS), an online tool that displays the readiness status for each ammunition family and DODIC using intuitive, color-coded charts.

ARS delivers readiness information up the chain of command in a clear, consistent format. To ensure fresh data from an authoritative source, ARS imports the latest Marine Corps ammunition inventory data twice daily from the PM Ammo Knowledge Management Portal (KMP). The target customers of ARS are the Combatant Commanders, Marine Forces, Headquarters Marine Corps, and the Joint Staff. “It answers the question, is the state of the stockpile wartime ready?” explained Mr. Shank, the senior programmer and configuration manager for the ARS project. “It’s a management tool for readiness reporting.”

ARS meets and exceeds the automated reporting requirements imposed by DoD directive 7730.65. The directive requires that all DoD components contribute readiness data to the DoD Readiness Reporting System to provide a “capabilities-based, adaptive, near real-time readiness reporting system.” The directive also states that components shall “use information technology to collect near real-time data on the readiness of military forces and support organizations to perform these missions.”

ARS is the Marine Corps version of the Army’s Munitions Readiness Review system. The Systems Team adapted the user interface and programming to reflect the Marine Corps’ readiness reporting processes.



#### Knowledge Management Portal - ARS

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### USMC Ammunition Readiness Status

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#### Overview:

##### C-Level Ratings



TANK / AT		SMALL / MEDIUM CALIBER		SUPPORT ITEMS			ARTILLERY	
Tank	AntiTank	Small Caliber	Medium Caliber	Mortars	Support Items	Mines	Artillery	Cannon Artillery
120mm	Javelin	Shotgun	25mm	60mm	Smoke and Riot	AP Mines	Propellant	105mm
	Predator	5.56mm	40mm M203	81mm	Pyro	AT Mines	Rkt Pod 298mm	155mm
	Tow	Handgun	40mm MK19		Demo		Air Defense Stinger	Fuze
	Shoulder Fired Rocket	7.62mm			Linear			
	SMAW	.50 Cal			Initiation Device			
		Small Arms			Counter Mines			
					Grenades			

PM Ammo decided to adopt the Army's interface in order to provide these customers with a consistent reporting format across the services. It is anticipated that all Services will soon reflect a common readiness reporting profile for continuity of the primary stakeholders use...common reporting using common methodology.

The beauty of ARS is that it is very low maintenance. Twice each day, it pulls data directly from the KMP. The only manual intervention required is that once a year, system administrators load Total Munitions Requirements (TMR) data into ARS.

In future releases the Program Manager for Ammunition, plans to add the capability to submit data to the National Level Ammunition Capability (NLAC) reporting system and also plans to add the capability to automatically generate the Quarterly Readiness Report to Congress.

**Mr. Steinhardt is currently assigned with BAE Systems in support of PM-Ammo IMSD additional information can be obtained from CWO3 Emminger, MCSC-PM Ammo MAGTF Operations Coordination Team and may be reached at DSN: 378-3167 email: [EmmingerRF@mcsc.usmc.mil](mailto:EmmingerRF@mcsc.usmc.mil)**



## Marine Corps Liaison Officer, Naval Ordnance Safety and Security Activity, Indian Head, Maryland

**Captain Hansen, MCLNO, NOSSA**

I recently returned from TAD as a member of the South East U.S. Ammunition and Hazardous Materials (AMHAZ) Handling Review Board, as the Marine's Explosives Safety Coordinator and Board Member. On that trip, I bumped into an old friend of

mine, Captain Nash. He asked me "So Captain Hansen, what do you really do at NOSSA anyway?" In formulating a reply, I simply said, "Whatever needs to be done." We then talked about other things and after parting company, I thought about my reply and it's been nagging at me ever since. Well, hopefully, this article will add a little meat to that answer and give everyone who reads this article an idea of what the Marine Corps Liaison Officer, here at the Naval Ordnance Safety and Security Activity (NOSSA) does.

To understand what I do, let me first give you an idea of what takes place here at NOSSA. This is not as easy as it sounds. NOSSA is an extremely diverse Command that has over 140 members who work on a very unique mission. But basically, the mission of NOSSA is: "Establish standard policy and procedures for, and provide global oversight of, Department of Navy explosives safety, ordnance physical security, ordnance environmental matters, insensitive munitions, and NAVSEA ordnance quality evaluation." Note that this mission statement reads "Department of the Navy" not just "Navy" or "Naval". The Navy explosives safety policy is based on the requirements of DoD 6055.9-STD, "Ammunition and Explosives Safety Standards." This DoD standard establishes uniform safety requirements applicable to ammunition and explosives and to associated and unrelated personnel and property exposed to the potential damaging effects of an accident involving ammunition and explosives during their development, manufacturing, testing, transportation, handling, storage, utilization, maintenance, demilitarization, and disposal.

The Commanding Officer, NOSSA, has responsibility for implementing the Navy Explosives Safety Program. OPNAVINST 8020.14/MCO P8020.11 "U.S. Navy Explosives Safety, Policies, Requirements, and Procedures (Department of the Navy Explosives Safety Policy Manual)" tasks the Commander of the Naval Sea Systems Command to serve as the Department of the Navy's technical authority for explosives safety. In turn, NAVSEAINST 5450.72, delegates the implementation of this program to NOSSA. So this means that what happens here at NOSSA has a direct and immediate impact on the Marine Corps and in particular, those issues involving Ground Ammunition.

So, there you go, but that doesn't answer the question of what I do now, does it. What exactly do I work on? Well, in a nutshell I provide liaison between

Program Manager for Ammunition and his staff and the CO NOSSA and his staff, on all Class V (W) Ground Ammunition matters. In this capacity, I work directly for the Head of the Explosives Safety Directorate (N7) and represent the Marine Corps on all Class V (W) issues here at NOSSA by participating in things like Explosives Safety Inspections (ESIs) and AMHAZ Handling Review Boards for Marine Corps ground ammunition storage activities. I also assist with the review and processing of all Marine Corps specific explosives safety site approvals, waivers, exemptions, Interim Hazard Classifications, and requests for non-DoD storage. I work closely with the Ammunition Officers and Explosives Safety Officers throughout the Marine Corps and with the Environmental and Explosives Safety Team in the office of the Program Manager for Ammunition.

An example of some of the more unique things that I've been involved in was my trip to Europe in November 2003. I traveled to Tbilisi, Georgia to conduct an Explosives Safety Survey for the field ammunition storage site supporting the Georgia Train and Equipment Program (GTEP). The GTEP assists the Government of Georgia by enhancing their counter-terrorism capabilities. During the GTEP, military equipment has been transferred to Georgia. Equipment includes uniform items; small arms and ammunition; communications, training, and medical gear; fuel; and construction materiel. My trip resulted from a request by the Marine Forces Europe Ammunitions Officer, Major Grabas, to assist him in conducting an Explosives Safety Survey for the field ammunition storage site supporting the GTEP. The site was established in May 2002 by a Government Support Contractor and had never been surveyed for compliance with DoD regulations. It lacked a valid site approval. Marine Forces Europe became OPCON for the program in 2003 and required the site approval be completed. I assisted by conducting the subject survey in November 2003 and provided a Safety Assessment for Explosive Risk (SAFER) report to Major Grabas. The SAFER report was the foundation for Marine Forces Europe's site approval for the GTEP.

So now that you know some of the things I work on, what does all that really mean? Well, if you look at me like a traffic cop for explosives safety issues and questions from the Marines and Civilian Marines seeking answers or assistance from the NOSSA, you're right on the mark. If you don't know who to talk to, or need an answer to a technical question, call me, my number is (301) 747-4965. I'll try to get you an answer

or link you up with the Technical Advisor or Engineer who can answer your particular questions.

That's about it; I hope this gives you an idea of what I do here at NOSSA. Semper Fi and see you on your next ESI.

**Captain Hansen is currently assigned as the Marine Corps Liaison Officer at the Naval Ordnance Safety and Security Activity and can be reached at e-mail: [hansenke@NAVSEA.NAVY.MIL](mailto:hansenke@NAVSEA.NAVY.MIL)**



## From Naval Weapons Station Yorktown To the "Tip of the Spear"

**CWO2 Wilson, MCLNO, Atlantic Ordnance  
Command, Yorktown, VA**

Naval Weapons Station (NWS) Yorktown is home for the Atlantic Ordnance Command (AOC) and Detachment Yorktown, which is responsible for all ships arriving to conduct ammunition operations. NWS Yorktown covers almost 11,000 acres and includes hundreds of magazines, a wide range of facilities, and a 2,250- foot pier on the York River. Operating adjacent to NWS Yorktown is Cheatham Annex, though you must exit NWS to gain access to Cheatham Annex. AOC is a tenant command of NWS Yorktown and Captain Beierl is dual-assigned as commanding both. AOC Detachment (Det) Yorktown is one of five detachments that make up AOC. The other Detachments are: AOC Det Sewell's Point residing aboard Naval Station Norfolk, VA and Naval Amphibious Base, Little Creek, VA. AOC Det Oceana residing aboard Naval Air Station, Oceana, VA. AOC Det Earle residing aboard Naval Weapons Station,



Earle, NJ and AOC Det Charleston residing aboard Naval Weapons Station, Charleston, SC.

The mission of WPNSTA Yorktown is to provide the base operating support functions that support all tenants, including AOC. These functions include port services, transportation, and MWR items support to visiting ships. Ordnance Safety is the FUNDAMENTAL concern for NWS & AOC Yorktown. The Peninsula Safety Storefront has been instructed to shut down pier operations if, in their opinion, such action is warranted. It is the goal of AOC Det Yorktown to ensure each and every ship that moors at Yorktown receives safe, smooth, prompt and more importantly, quality service.

LFORM (Landing Force Operational Reserve Material), is one of the duties assigned to the Marine Corps Liaison Officer (MCLNO) for the Program Manager for Ammunition (PM Ammo). The MCLNO is responsible for receiving, reviewing, processing and coordinating all Marine Corps Class V (W) requisitions in support of LFORM load outs. In addition to the LFORM requirements, the MCLNO must coordinate the on load of Marine Corps Training Allowance (MTA) packages with MARFORLANT, II MEF (G-4 Ammo) and Officer in Charge, Ammunition Supply Point, Camp Lejeune, North Carolina.

In addition to LFORM duties, the MCLNO represents the Program Manager for Ammunition (PM Ammo), MARCORSYSCOM on all logistical functions concerning the life cycle management of Marine Corps owned Class V (W). This representation includes attending meetings and conferences where matters under discussion impact or have the potential to impact the Marine Corps. One such example currently underway is the resurfacing of the northern end of the Yorktown Pier. Contracts have been completed and work is scheduled to begin March 1st, 2004 to hydro blast 2.5 inches of concrete from the pier surface and refinish the pier. This work will limit the amount of ships accessible to NWS Yorktown to one. The work is scheduled to last through the summer and be completed September 1st depending upon the weather.

While LFORM is not the only mission that the MCLNO performs, it is one of the most important as it provides ammunition to the "tip of the spear." Another mission of the MCLNO is in supporting the Marine Corps Security Force Battalion's (MCSF BN) Fleet Anti-Terrorism Security Teams (FAST). NWS Yorktown is home to 2nd FAST and Cheatham Annex

is the new home to 3rd FAST. These companies have an aggressive training schedule by any standard and the

MCLNO has processed 61 requests for ammunition since the new fiscal year. Though the NWS is NOT an ASP, the support received from the civilian staff is nothing short of outstanding. Many last minute requests and cancellations have been filled in order to provide support for the Marine Corps. The Navy/Marine Corps Team definitely has a great working relationship aboard NWS Yorktown.

Whether it is an LFORM On load, a FAST Company requirement or an inventory sampling of 2T and 0T CoG ammunition, the MCLNO is involved. Besides the work at NWS Yorktown the base is famous for it's MWR Facilities. There is a new state-of-the-art recreation center and the gym is more than adequate for most people. There are running and fitness trails that wind throughout the NWS as well as cycling paths. The golf course is one of the most inexpensive around and never crowded. Wild turkey and base ponds round out the sportsman's wishes. I welcome all who desire to see an LFORM On load or Offload to please call in advance for the ship's schedule and I will be glad to guide you through the process.

**CWO2 Wilson is currently assigned as the Marine Corps Liaison Officer at NWS Yorktown and can be reached at DSN 953-7583 and e-mail:**

**[wilsonrs@yktord.navy.mil](mailto:wilsonrs@yktord.navy.mil)**



## Marine Corps Forces Europe (MFE)

**Major Grabas, MCLNO, MFE**

The tour of duty as the Marine Corps Ammunition Liaison Officer for the Commander, United States Marine Corps Forces Europe (MFE), is

both exciting and rewarding. This assignment requires self-discipline, motivation, a proactive attitude and innovative approach to support the mission and get the ammunition to the war fighter in a timely manner. The rewards come from supporting Marines and Coalition Partners in variety of venues and places. However, the most rewarding aspect is the support you receive from your established relationships with counterparts from other Services and Coalition Partners, whom you can call upon in need. This is only possible if reciprocal support is provided as well. Mutual trust and credibility, especially during contingency operations, are very important in this unique environment.



**Building Pallets**

The MFE is the Marine Component to the Combatant Commander (CC) United States European Command (EUCOM). The EUCOM Area of Responsibility (AOR) covers more than 13 million square miles and includes 91 countries and territories. This territory extends from the North Cape of Norway, through the waters of the Baltic, Black and Mediterranean seas, most of Europe, parts of the Middle East, to the Cape of Good Hope in South Africa and recently has been extended into the far eastern part of Russia (Asia) and Antarctica.



**Surface Operations in Norway**

My responsibilities require me to wear three hats. In these capacities I support three separate and distinct chains of command. First, as the Ammunition Officer, MFE, in either a supporting or supported role, I provide ammunition to Marines tasked by EUCOM. This includes ammunition support to Marines directly participating in either Combined or Joint operations,

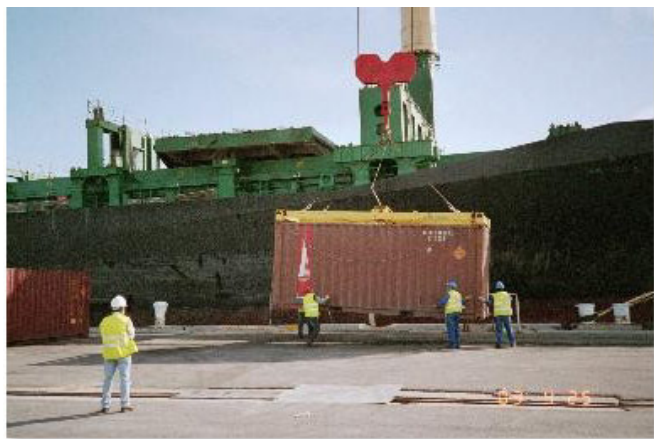


**Air Operations in support of ATRP**

exercises and engagements. The ammunition support may include other Services and Coalition Partners on a reimbursable basis. Secondly, I provide ammunition support to the Marines of the Naval Component in the EUCOM AOR. These include Marine Corps Expeditionary Units (MEU), Marine Corps Security Forces (MCSF) and Fleet Anti-terrorism Security Teams (FAST). Lastly, as the Ammunition Liaison Officer, I am responsible to the Program Manager for Ammunition (PM Ammo) for issues related to life cycle management functions of assets held physically within the EUCOM AOR. This includes asset inventory, distribution, surveillance and disposition. The Marine Corps does not own the infrastructure for the ammunition storage within the EUCOM AOR. As a result, most of the support provided is based upon agreements and arrangements made with the Dominant Service (i.e. U.S. Navy, U.S. Army, U.S. Air Force) in a given country or directly with the Host Nation where active logistics support agreements exist such as Georgia, Israel, Norway, Poland and Romania.

Who are my customers? MFE does not have any units larger than Battalion/Squadron size stationed in the EUCOM AOR. However, there may be at any given time, one to four thousand Marines passing through this theater and in much greater numbers during deployments similar to Operation Iraqi Freedom. The most often supported Marines are from MEUs, MCSFCO Europe and the FAST. Europe is the

homeport for Marine Corps Pre-positioning Squadron One (MPSRON-1). MPSRON-1 has made significant contributions in the Global War on Terrorism along with our shore stored contingency assets in the Mediterranean and Norway. Lastly, ammunition may also be provided to forces from MARFORLANT and/or MARFORRES in support of combined exercises/engagements involving our coalition partner forces from the North Atlantic Treaty Organization (NATO), Partnership for Peace (PFP) and Dialogue countries.



### Ammunition Operations in Rota

As seen in Afghanistan, Iraq and other hot spots throughout the world, there is no General Defense Plan, and the enemy is constantly changing, thinking and adapting. Therefore, we have to maintain our Marine Corps spirit and vigilance in order to “adopt and overcome” as well. For example, EUCOM’s Transformation initiative has renewed the role of the Geo Pre-positioning Program. The Norway Air Landed Marine Expeditionary Brigade (commonly known as NALMEB), a hold over from the “Cold War” has been proving it’s continuing utility in the 21st century. Its role changed from supporting the reinforcement of NATO defenses against Soviet invasion to that of defending against regional disputes and providing forces for “Out of Area Operations.” In the past two years, Marines utilized ammunition from Norway to augment either starter or sustainment ammunition stocks of engaged forces. CWO2 Battistoni, a MFE Reserve Officer, wrote about this capability in the April 2003 Ammunition Quarterly edition.



### Ammunition Support Operations

Another example is the Personnel Temporary Augmentee Program (PTAP), which primarily executes the evaluation efforts of the Marine Corps Programs Department (MCPD). The MCPD’s mission is to inspect Marine Corps ammunition stored outside the contiguous United States. CWO Fulton, an Ammunition Officer from MARFORRES, wrote an article last summer for the Ammunition Quarterly on the efforts of the Reserves supporting a new and unique logistics concept called Storage and Transport Frames (STF). This new concept provides major improvements in the areas of ammunition containerization efficiency, mobility, deployment and flexibility of retrograde. At the latest Maritime Pre-Positioning Force (MPF) Ammunition Tailoring Conference held in Charleston, SC the STF concept found wide acceptance among both Ground Ammunition and Aviation Ordnance Officers.



### Storage and Transport Frames (STF)

As we continue the Global War on terrorism, we anticipate more ammunition work in Africa in support of programs such as the African Contingency Operations Training and Assistance. This program



trains military trainers and equips African national militaries in conducting peace support operations and humanitarian relief.

If you have the opportunity to be stationed at MFE as an Ammunition Officer, you will serve as the principal advisor to the Commander on all matters pertaining to Marine Corps owned ammunition in the theater. You will administratively and operationally fall under the Assistant Chief of Staff for Logistics, G-4, who will be your immediate supervisor. You will ensure that the Program Manager for Ammunition is kept apprised of any factors affecting the readiness of Marine Corps owned ammunition stored within the EUCOM AOR. You will manage ammunition assets in ongoing, planned, and crisis action operations and programs. The work is exciting and requires a lot of travel since assets are stored throughout the theater. You will conduct site visits and Technical Assist visits in all locations holding USMC ammunition in the AOR at least once a year.

The MFE Headquarters is located at Panzer Kaserne, known for its association with Erwin Rommel, the World War II German Field Marshal. Rommel was best known for his advances in 1942 against the British in northern Africa, where he was eventually defeated once the United States came into the mix.

**Major Grabas is currently assigned as the Marine Corps Liaison Officer for Marine Forces Europe and may be reached at e-mail:**

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## Moving in the right direction and expanding on the way we do business

**MGySgt Benjamin, Marine Forces Atlantic, Ammunition Chief**

In today's world we are witnessing many profound and rapidly unfolding changes. At the same time, the ammunition leadership is determined to identify what we need to change to do our jobs better and more effectively and still maintain our current high degree of readiness, flexibility, responsiveness and dependability if we are to continue to meet the challenges of the 21st century and beyond.

The ammunition field is a very unique MOS. All of the knowledge and experiences is derived from the product an enlisted background, from PVT through LtCol. Over the past three decades ammunition community has answered every challenge, and "RAISED THE BAR" at every opportunity. Our goal is simply to provide the war-fighters with the very best ammunition support possible.

As we examine the way we do business we realize, we must keep pace with the support requirements of our operating forces, to train and operate effectively with other services and to increase our combat capability, this requires ammunition to be prepositioned at various army locations and be visible at all levels.

In 1974, just before graduating from Boot Camp at Parris Island, I was told that I had been assigned the

*Ammunition Quarterly 27*

### Training Ammunition Management Information System Redesigned (TAMIS-R)

**- TAMIS-R will serve as the Marine Corps standard for forecasting training ammunition at Marine Corps and Army facilities**

**- TAMIS-R will fulfill the Statement of Annual Requirements (SOAR) requirement of the P4400.150**

Training site: <http://www.tamis.org/>

Live site: <http://live.tamis.org>

Month ammunition required	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
Month forecast must be entered in TAMIS-R	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May

MOS of 2300. I had no idea what that meant and you didn't dare ask the Drill Instructors for details about your assignment during those days. Surprisingly, I was told that I would be counting bullets. As a young private, I said to myself, "What the hell are bullets?" and the kicker was I had to attend the ammunition school in Alabama. At the time any place sounded better than Parris Island, SC.

After graduating, as a 2311 Ammunition Tech I was eager to meet the challenges. Armed with a wealth of knowledge of ammunition accounting practices and procedures provided by great Marine instructors, such as retired MSgt Goodman (better known as PJ), retired MSgt Tyler and retired Major Warren. They stressed that a well-supported Marine is the backbone of an effective Marine Corps and it is the ammo techs job to provide that support.

It's been a long time coming, but we have finally made it out of darkness and into light with TAMIS-R, this is the first time we've had an automated system to be sanctioned by MARCORSYSCOM standardizing Class V (W) support procedures throughout the Marine Corps. All of the things that I have learned over the past 30 years about training ammunition procedures still applied up until Sept 2003. With TAMIS-R visibility is made available at all levels using near real-time data.

The days are gone for the manual way of doing business that required the unit ammo tech to type, print or walk through 1348 documents from the battalion to the regiment and to division for signature before final processing at the Ammunition Supply Point. All corrections were sent back to the requisitioning unit. Some common errors were strike through, white outs, pen changes and type over.

In a perfect world Unit's commander would have access at their fingertips to manage and control their training allowances regardless of their location. It's ironic that some of the same individuals that heard the same pitch back in the 70's from our instructor are working with others that are directly associated with this new initiative.

During the late 90's the Marine Corps expended approximately \$258M in ground training ammunition. In 1998 a Ground Training Ammunition Review Board (GTAR) was convened to find ways to reduce ammunition requirements by 5% each year starting in FY00 through FY05 without affecting the operators

capability to train. At that time we had no standardized ammunition automated accounting system within in the Marine Corps to capture real time expenditures against training allowances. In order to give the Commander at every level an accurate assessment of who, what, and where allowances were being expended. Now we have a system that will allow us to use good business practices to achieve the goal. In order to achieve our goal Training Ammunition Management Information System Redesigned (TAMIS-R) is a vehicle to provide an accurate assessment of allowances and expenditures. This ideal system called TAMIS-R allows unlimited access to the MARFOR's to the lowest subordinate commands the ability to manage and control allowances. The MARFOR's being the hierarchy has sub-authorized to each subordinate commander to utilize this for the purpose of management and control of conventional Class V (W).

The system provides unbelievable capability that we could only dream about back in the 70's. The unit commanders have real time data at their disposal to maintain their allowances with much greater accuracy, such as, forecasting, re-allocating, submitting transportation requests, tracking expenditures, and generating various reports.

It is vital that requirements are forecasted to ensure that adequate ammunition stocks are available at each ammunition supply point. This effort results in cost effectiveness and timely support to units training at less cost to the taxpayer. This web-based system without a doubt will enhance everyone's ability up and down the chain.

As we move forward with this system, it is crucial and mission essential that we use TAMIS-R as it was designed to be use to achieve success. It is a superb system, and despite a few administrative issues it is a vast improvement over the old way of doing business. I am still amazed at how well our young Marines have grasped this system over the past few months. As SNCO's and NCO's we are charged with the responsibility to learn this system thoroughly. Training must be accomplished whether a support element or end user at every level that holds a Class V (W) account. As the ammunition community we are charged to lead by example to ensure that the success of this system is achieved.

**MGySgt Benjamin is assigned as the Ammunition Chief for Marine Forces Atlantic and can be reached at e-mail: [BenjaminJ@marforlant.usmc.mil](mailto:BenjaminJ@marforlant.usmc.mil)**

## TAMIS-R: Scheduled Improvements

a. TAMIS-R import of a ROLMS export file, expected release late April. A ROLMS browser has been developed that will export issues/serviceable turn-in transactions from ROLMS into an import file format for upload into TAMIS-R. Marine Corps ASPs will run this browser daily and upload the file into TAMIS-R. This will automate the manual issue/serviceable turn-in process for units at Marine Corps ASPs. Manual issue/serviceable turn-in entries will still be required for non-ROLMS sites by the unit (i.e. Requisitioning training ammo from Eglin AFB). Detailed instructions will be provided to all users.

b. Training Ammunition Request (TAR): Expected release early April. The TAR will replace the current transportation request (TR) process addressing several shortfalls identified in ref c. The TAR will allow partial cancellation of a pending transaction (quantities may be decreased but not increased). Single line items may be cancelled without canceling the entire transaction. The TAR will allow same day requests and it is also possible to modify the pick-up date and time. Marine Corps ASPs must login to TAMIS-R and accept each TAR, this will generate a confirmation of receipt via email notification to everyone on the email routing. Detailed instructions will be provided to all users.

### Forecasting Lockout

The lockout for forecasting at Marine Corps ASPs will not be implemented. The 60-day forecasting lockout will remain in effect at Army activities. Commanders are still responsible to forecast all known ammo requirements to the supporting ASPs. Accurate forecasts enable the ASPs to adequately stock required ammo, reduce occurrences of not in stock (NIS) status of items and minimize the need for high priority requisitions. Request MARFORs, MEFs and MSCs exercise proactive oversight to identify supported units that habitually abuse the forecasting and requisitioning process.

## AMMO-74 Explosives Safety Officer Orientation/Refresher Course

**Mr. James, BAE Systems in support of PM-Ammo**

Do you remember the day when you were first assigned the duty of Explosives Safety Officer (ESO)? You walked into the safety office and expected to find a turnover folder with everything you needed to know about how to be an ESO. You looked for the turnover file but all you could find were shelves full of Marine Corps Orders, Technical Manuals, Ordnance Pamphlets, and a whole lot of instructions and directives. There had to be something in one of these publications, telling me what I was supposed to do. So, you start reading and keep reading until everything becomes confusing and sounds the same. Now you begin thinking there has to be a course out there somewhere. So you continue reading, making phone calls and find out there is nothing. There are task specific courses, electrical explosives safety, environmental explosives safety, facility planning, etc., but nothing to teach you how to



**Aircraft Loading Operation**

manage an explosives safety program. After a couple sleepless nights, you say to yourself what's the big deal. You've spent many years as an ammunition technician or aviation ordnance man, how hard could this ESO job be. I'll use what I've learned working in Ammunition Supply Points (ASP) or station ordnance issuing and receiving ammunition, inspecting magazines, maintaining records and performing inspections, or on



flight lines loading aircraft, building bombs. I know explosives safety!

As you have discovered since, running an effective explosives safety program requires specific skills and knowledge. The class you have been waiting for has finally arrived. The Program Manager for Ammunition Environmental and Explosives Safety (EES) and Inventory Accuracy (IA) Teams with assistance from Defense Ammunition Center (DAC) and Naval Ordnance Safety and Security Activity (NOSSA) has developed a course for ESO's. The name of the course is Explosives Safety Officer Orientation/Refresher Course, AMMO-74. We have taken all the requirements from Marine Corps Order P8020.10A, NAVSEA OP 5 Volume I, and NAVSEAINST 8020.14 and rolled them up into this all-informative class.

AMMO-74 provides individuals assigned ESO duties, training in the technical and managerial aspects of Naval explosives safety programs. Material presented in this course will expand the Explosives Safety Officer's knowledge base by exposing the ESO to processes, procedures, and responsibilities required to manage a Marine Corps Explosives Safety Program. Emphasis is on ESO responsibilities listed in Marine Corps Order P8020.10A and NAVSEA OP 5, Volume I.



#### **AMMO-74 Orientation Class, Norfolk, VA**

Completion of AMMO-74 does not fully qualify an individual as an ESO but does provide the guidance needed to build an effective explosives safety program. In addition to the successful completion AMMO-74, MCO P8020.10A Chapter 10 lists the additional mandatory training courses required to become a fully certified ESO. These classes include successful completion of Safety Assessment for

Explosives Risk (SAFER), Explosives Safety for Naval Facility Planning (AMMO-36), and Electrical Explosives Safety for Naval Facilities (AMMO-29).

With the development of new and more potent explosives, changing quantity distance standards, magazine designs, as well as other constantly changing requirements, this course is ideal for keeping ESOs informed. The addition of AMMO-74 as a mandatory core course provides foundational training for the new ESO and keep the seasoned ESO updated with new requirements. In the constantly changing world of explosives safety, even the most experienced ESO will find immense benefit in the course.

Topics covered include: Command Administration and Management, Qualification and Certification, Standard Operating Procedures (SOPs), Ammunition Storage/Magazines, Operating Buildings and Production Lines, Lightning Protection/Grounding, Environmental Compliance, Arms Ammunitions and Explosives (AA&E) Physical Security, Ranges and Explosives Ordnance Disposal (EOD), Motor Vehicle Transportation, Railroad Transportation, Piers and Wharves/Barges, Airfield Operations, Ammunition/Explosives Associated Equipment, Inventory Management, and general safety concepts.

Students attending this course should have a good working knowledge of Marine Corps Order 8020.10A, NAVSEA OP 5 Volume I, and successfully completed AMMO-49 Naval Explosives Safety Managers/Supervisors Orientation (CBT).

The AMMO-74 course will be initially offered quarterly until all Marine Corps and Navy ESO have attended. Course locations and dates include: Naval Weapons Station Port Hadlock 3-14 May 2004, San Diego Naval Base 12-23 July 2004 and Marine Corps Base Hawaii 23 August to 3 September 2004. Thereafter the course will be offered on a biannual basis.

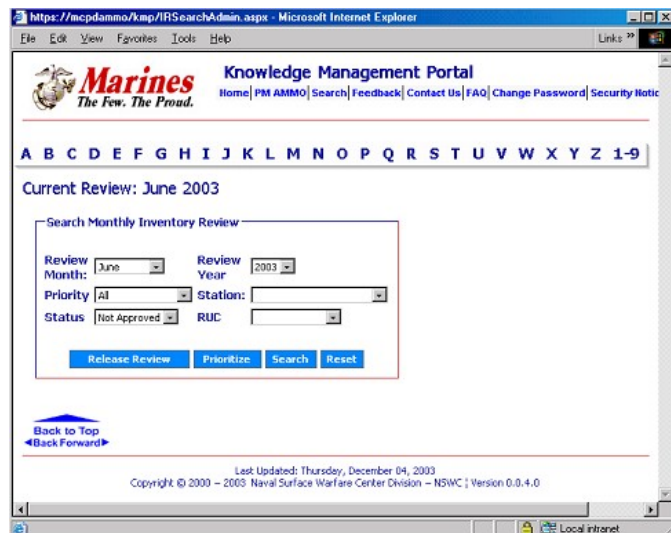
Quotas can be requested by contacting Ms. Smith MARCORSYSCOM, PM Ammo, LogDiv, EES, at DSN 378-3151, commercial 703-432-3151 or by email: [smithar@mcsc.usmc.mil](mailto:smithar@mcsc.usmc.mil)

**Mr. James is currently assigned to BAE Systems in support of PM-Ammo-EES Team**

# Monthly Inventory Review Report Migration

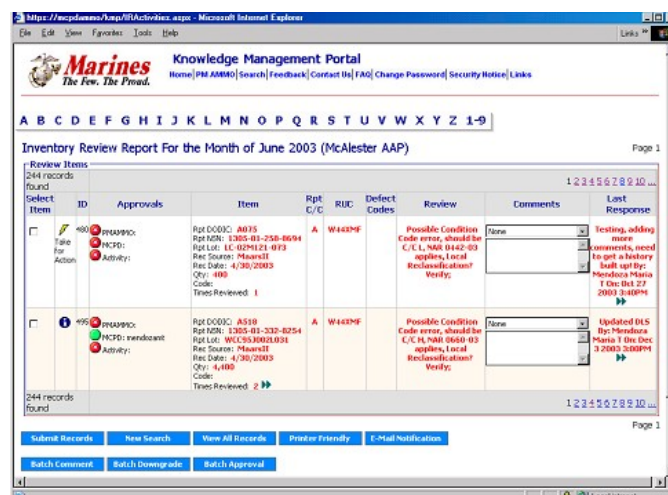
## MCSC-PM Ammo, IA Team and MCPD

Many of you at our Ammunition Supply Points (ASPs), Army Depots and Navy tidewaters are aware of the Monthly Inventory Review Reports (MIRR). The Inventory Accuracy (IA) Team manages this report at the Program Manager for Ammunition (PM Ammo). The MIRR is a tool that attempts to catch inventory discrepancies that may have gone unnoticed. It also acts as a safety net to identify assets that have had a Notice of Ammunition Reclassification (NAR) released that may have been missed. About a year ago, in an effort to work smarter and not harder, it was decided to place the MIRR on the PM Ammo Knowledge Management Portal (KMP). The Marine Corps Programs Dept (MCPD) Fallbrook, California was tasked with assisting the IA Team in bringing the MIRR on-line through the KMP. Starting in early 2004 this report is moving into cyber space!



Currently, the activities are required to reply though email on the report to IA Team. However, once the MIRR, is on the KMP, the email process will be eliminated and replies will be submitted through the KMP. Essentially, the KMP will be a path for information flowing in all directions to all of the players. More information on its posting date will be sent out as it becomes solid. If all goes as planned, this March, the final touches on the web version will have

been completed and we'll be moving to a system that will allow us all to work as a cohesive team to improve the Marine Corps stockpile.



So how's this going to affect those of you that are involved with records and inventory control? The intention is that it will make your life a little easier and allow you to see how you're doing versus your fellow Marines. We're well aware that many of you that handle MIRR are not exceptionally happy when that email hits your inbox. While there are many activities, usually those where the record count is small, that see these as worthwhile oversights of their inventory, there are others typically those that have a large number of records to review each month, that rue the day that they ever got assigned to replying to the IA emails. The task of assuring the accuracy of your records will not be going away. It will simply apply some more computer power to the process. Hopefully this will eliminate some of your annoyances. Additionally, a progress chart that was previously only available to the IA team will be made available to all. This chart provides a matrix of current and past MIRR results and will allow each activity to not only examine how they're progressing, but also where they stand compared to others.

Here are some changes for which you should be prepared for:

- There will be no more emails with Excel spreadsheets attached – you'll have to log onto the KMP to access your MIRRS.
- All text replies will be via the KMP.

- A history will be available for your previous months listings. From the main screen you'll easily be able to see how many times a particular issue is repeated or what you said last month.

- You, the IA team, and MCPD will have an opportunity to review each other's replies. Not until all concur will the line item be tagged as being resolved.

- You'll be able to perform batch replies. If one comment is applicable to multiple records, simply select all those records and enter a single reply.

- Those at other storage activities will be able to see how you're doing at your activity, through the quarterly progress report. Competition is anticipated.

Here are some things that won't change:

- Each storage activity will be responsible for reviewing and replying to MIRR's. Listings that indicate that a NAR was missed must be addressed within 3 working days.

- Local downgrades with condition codes H or V, once identified, will be removed from the review for 6 months. Condition Code J will be looked at to ensure all proper procedures and documentation related to local suspensions and possible investigations have been accomplished. After that time, if the same item is still in the same condition code, i.e., H, V, it will appear in the next MIRR and will be researched for appropriate action.

- Unrecognized DODIC/NSN/Lot combinations will need some input from you before they go away. If you have an Ammunition Data Card (ADC), Depot Surveillance Record (DSR) or a digital picture of the factory markings, share.

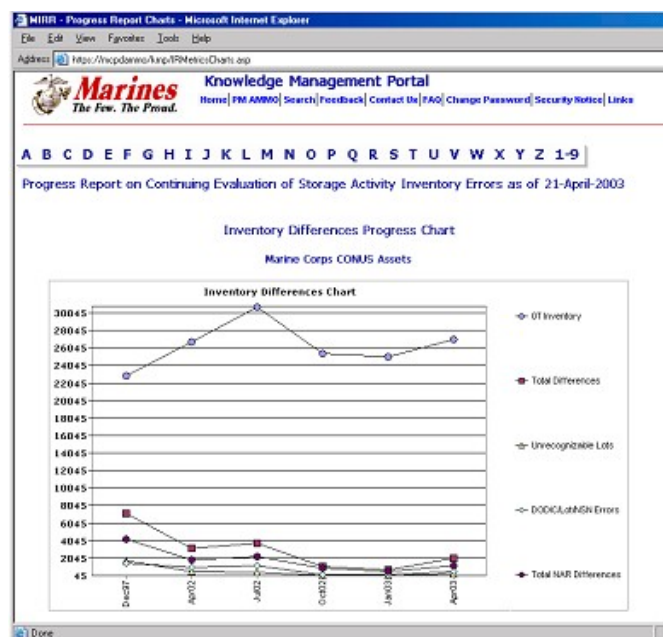
- MIRR's will just keep on coming. The intent is to eliminate "inventory inaccuracies" within the Marine Corps stockpile. Currently this is the best tool to make that happen.

- If your activity doesn't get a monthly MIRR, pat yourself on the back – you're doing an outstanding job.

A detailed Standard Operating Procedure (SOP) for each process is being developed by the IA Team and will be posted to the KMP. These SOPs will outline the responsibilities of each command, provide definitions of

the fields you'll be working with, and give detailed instructions for completing the portions of this report on the KMP. Prior to the report being posted on the KMP, this SOP will be sent out to all concerned.

Please keep in mind that inventories evaluated for MIRR's come from the Marine Ammunition Accounting And Reporting System (MAARS II). The data feeding MAARS II is from your ROLMS monthly PLR report or, for Army activities, from a monthly download of the Worldwide Ammunition and Reporting System (WARS). This is not real time data but simply a snapshot in time that is unchanged until the next download.



MAARS II lot level updates happen between the 1<sup>st</sup> and 8<sup>th</sup> of each month whenever you run "Generate Reporting Transactions" within the ROLMS program. Processing this raw data cannot begin until all activities have reported. Due to additional steps in the review process, the actual evaluation of your inventory may take another 10 days. This lag in the process between Periodic Lot Reports (PLR) that may have been transmitted on the 1st and the review process that occurs up to several weeks later creates a period where inventory changes that have been made during this interval will not register. Therefore, MIRR's will not be 100% accurate. Take that into account when you're reviewing your MIRR and try not to get too upset when we indicate that a NAR was missed that just came out the previous week. We're working to reduce that lag time, but for now it's just the nature of the beast that



will not significantly change once MIRRs are on the KMP.

Over the years, we've recognized some typical recording routines that can lead to inventory errors. The following are some tips to help minimize the errors at your site:

- Eliminate common typographical errors in your inventory. Missing dashes or extra spaces will show up as errors. Don't use the letter "O" where the number zero is required, or the letter "I" where the number "1" is appropriate.
- Use "UNKNOWN" when the lot number is not known, and only use "NONE" if no lot number (including a commercial lot number) was assigned. For example, "NONE" is a valid lot number for Stinger grip stocks and several other inert DoDICs because they never had a lot number. However, UNKNOWN is used when an item had a lot number, but you're unable to determine what it is.
- Review AIN 030-2001 and ensure your Southwest Asia (SWA) exposed lot numbers are in the correct format with dashes and letter "Y" in the correct position.
- Review AIN 032-2001 and ensure your TOW missile lot numbers are in the correct format with dashes in the correct position.
- Train your magazine personnel to recognize factory boxes and stencils and to question the info on non-standard boxes, even if stenciled.
- Train your Records personnel to recognize standard lot number formats so errors on 1348s are not carried over into your inventory.
- Be careful when selecting NSNs from the ROLMS drop down menu and make sure the NSN is correct for the lot packaging and matches the remainder of the same lot in your inventory.

In order for this new process to work for your command, you will need to have access to the KMP. If you have not yet been in the KMP you will need to request access, which can be done via the PM Ammo web site at:

<http://www.marcorsyscom.usmc.mil/am/ammunition>

Once MIRRs are placed on the web site, it will mean a new way of doing business. With the better technology that's available to us, we're going to move the bar a little higher and get even better. The following are what we believe the basic responsibilities for each command will be.

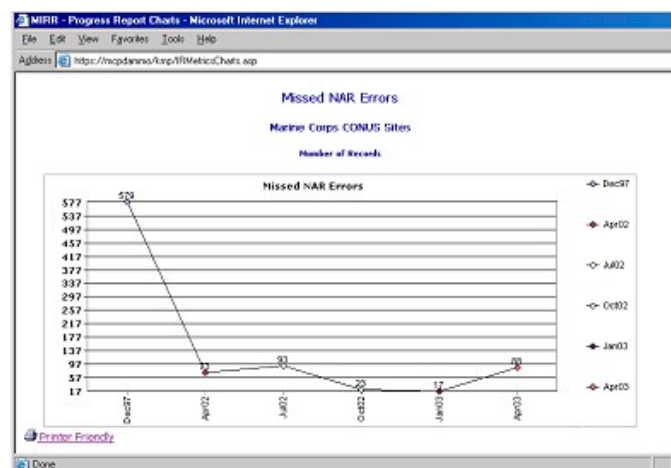
#### **MCPD Responsibilities as they Relate to the KMP version of Monthly Inventory Review Report (MIRR)**

1. Continually update the DoDIC/Lot Status (DLS) database. For the Total Munitions Requirement (TMR) and Life Cycle Management (LCM) DoDICs (and their authorized substitutes), as often as is needed, append additional DoDIC/NSN/Lot combinations along with their current condition codes.
2. Review the monthly inventory and identify DoDIC, NSN and Lot number inconsistencies. Evaluate the inconsistencies between DLS and the Worldwide Inventory (WWI) and determine if the differences indicate a new DODIC/NSN/Lot combination or a reporting error.
3. Run concurrent process for 3 months. Compare previous MIRR method to new MIRR output to assure that KMP is operating correctly.
4. Within 3 working days following the posting of the updated WWI, assure that new monthly MIRRs are posted to the Knowledge Management Portal (KMP).
5. Analyze pending downgrades designated by the IA Team.
6. Analyze activities' comments.
7. As is necessary, research and provide technical knowledge dealing with unresolved IA issues. Provide findings through appropriate input to the KMP and to other PM Ammo team(s) as is appropriate.
8. When requested, provide technical responses to queries from the IA Team.
9. Perform necessary programming to develop and implement approved system change requests and tweak existing KMP software as necessary to maintain or improve system performance.

## MARCORSYSCOM RESPONSIBILITIES as they Relate to the KMP version of Monthly Inventory Review Reports (MIRRs)

1. Comparing the current report to the previous month's report on the KMP, looking for repeat errors and missed fixes.
2. Evaluating any possible comments from the activities on past reports and re-occurring on a current report on the KMP.
3. Reviewing possible downgrades that may have occurred by viewing replies from activities on the KMP.
4. Review for any possible action that the activity may have executed, however; it may have not processed through the system in time for the PLR report.
5. Reports are released to the activities by the 20th of the month via the KMP. No longer utilizing the email and excel spreadsheet.

Note: Occasionally, some activities may or may not receive a report on a monthly basis, depending on the activities status of assets that they are maintaining.



## ASP responsibilities as they Relate to the KMP version of Monthly Inventory Review Reports (MIRRs)

1. The activities will receive the MIRR (Via the KMP) after the IA Team has released the report and it's comments. The activities will review the report and take the appropriate action in order of priority.
2. Items highlighted in red are being reported in a less restricted condition code than a NAR has assigned.

3. The activity will provide a response to all items not highlighted in red within a two-week time frame.

Note: It is highly encouraged and recommended that the activities take any necessary action that may require changes in a timely manner to allow those changes to be processed prior to the PLR updating. This will eliminate any possible duplicates forwarding to the following month.

Migrating the MIRR from an email – excel spreadsheet format to the KMP will make all of our Inventory Accuracy goals more efficient and effective. Through one application, readily viewed by each level, the process of the Monthly Inventory Review Report will be less tedious and will allow each level of the asset tracking chain to work in a fluid environment. The MIRR on the KMP will, with all of the extra automation, higher level of visibility and less tedious processing, be a valuable tool for all in improving and maintaining accurate records of our Class V (W) stockpiles, ultimately improving our capabilities on the battlefield.

**Questions regarding the future process of this report can be directed to the MCSC-PM Ammo IA Team**



## Malfunction Reporting and Review Process... plus Stockpile Review

**GySgt Williams, MCSC-PM Ammo-SABOT and Mr. Francis, MCPD**

A recent Inventory Accuracy / Stockpile Review process raised a question regarding why a specific Ammunition Lot Number (ALN) of DoDIC B542 was being reported in Condition Code "JULIET" at only one storage location. A call to the Ammunition Supply Point (ASP) Records Chief indicated the local downgrade resulted from a malfunction – a cartridge (ctg) case stuck in the barrel – that occurred five months earlier. A Malfunction Report message had been

prepared in accordance with MCO 8025.1, but had not been released.

This situation highlighted the fact that when one step of a process fails, it causes additional problems. In an effort to insure the loop is completely and accurately closed, the following process outline and description of responsibilities are presented:



**AA29 12 Ga. Beanbag, Non-Lethal Malfunction**

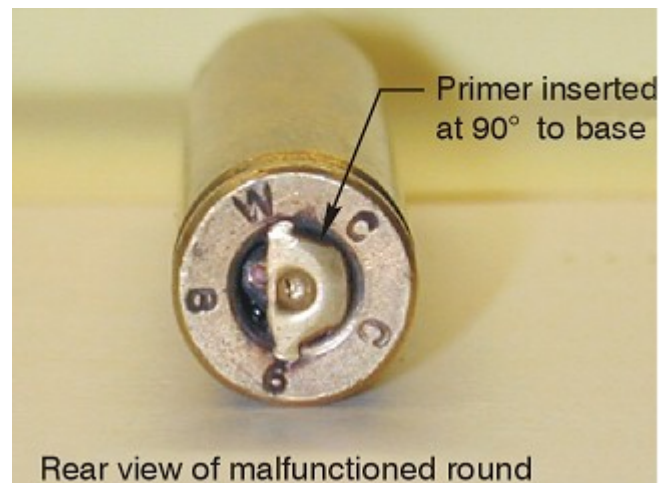
#### **Reporting Process – Unit Responsibility:**

A unit is firing ammunition – in a training exercise, at Combined Arm Exercise (CAX), in combat, or somewhere in between. They experience an ammo malfunction (failure of the ammo to function as intended/expected) or they identify an ammo defect (ammo is not in complete, ready-to-fire condition as it is removed from packaging – missing parts, rusty, dented, etc). The NAVMC 10155 (wallet card) and MCO 8025.1 provide guidance to the unit (usually the 2311 Ammunition Technician) on how to report the incident and what information is required to be included in the report:

- Identification of unit, w/POC having first-hand knowledge of the incident;

- Complete identification of ammunition (DoDIC, NSN, ALN, S/N) along with how many rounds fired and failed;
- Identification/description of weapon(s) including condition before and after the incident, settings, rate-of-fire, target, etc;
- Description of incident, including whether there were any injuries, fatalities, or damage;
- Local (prevailing) conditions, date and time of incident, weather, terrain, etc;
- Ammo storage conditions prior to firing;
- Whether ALN was locally suspended as a result of the incident (by RSO or ASP) and any other pertinent information.

If the unit has remaining ammunition from the ALN that failed to function as intended and/or ammunition residue from failed rounds (misfires, ctg cases, fragments, etc), and if deemed safe to transport by EOD, they are to return them to the ASP with notification that they experienced a malfunction. Damaged weapons are to be returned to the unit armory with notification that a malfunction had occurred and that the weapon is to remain 'as is' until further notice.



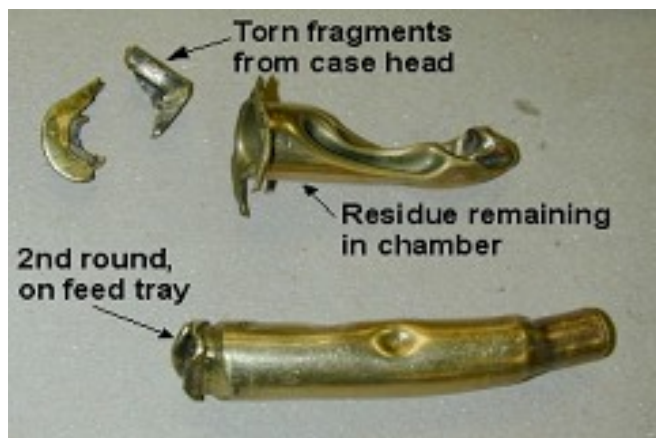
**A059 Round Defect**

This information is collected, written up, and submitted as an electronic message (Naval Message) via the Defense Messaging system (DMS or MDS). The message goes to MARCORSYSCOM (PM Ammo) and MCPD Fallbrook, along with a number of additional offices in the Navy and Army that are interested in field problems involving ammunition and including the local



ASP that issued the ammo. Obviously, timely submission of this message is very important in order to prevent a second, similar incident with possibly defective ammunition.

If an incident is considered critical – with serious injuries, fatalities, or damage – the PM Ammo is to be notified immediately by phone (and with a follow-up message report). The firing position is to be ‘roped off’ – taken out of operation and protected/maintained ‘as is’ - until investigators arrive on site.



**.50 Cal Malfunction**

#### Reporting Process - ASP Responsibility:

The issuing ASP, with input from the RSO, is to make a determination of whether to locally suspend the involved ALN based on severity of the incident. If suspended, the ASP is to notify (phoncon, e-mail, etc) PM Ammo of their action, including on-hand asset balance of involved ALN.

If the unit returns remaining rounds and/or residue, the ASP is to tag, segregate and store the turn-in items, ‘pending investigation’, until receipt of a notice to release or dispose of the ammunition by PM Ammo.



**B519 Visible Cracks and Leaking Dye**

#### Review (Assessment) Process:

Malfunction Reports are reviewed (or assessed) for the purpose of determining if the ammunition Lot involved was at fault – if there was any possibility that the ammunition was defective and that the defect resulted in the malfunction. In the case of ammunition found to be at fault/defective, a secondary purpose of the assessment is to determine if there is a cost effective fix for the defect. The assessment process is exclusively driven by the safety and reliability of the ammunition.



**5.56MM (rounds on the left fired resulted in a blown M16A2 weapon)**

MCPD Fallbrook is tasked by PM Ammo to provide a technical assessment of each reported malfunction – 165 reported each year. For routine malfunctions, MCPD has three days to provide a completed assessment to PM Ammo. Assessments for critical malfunctions (injury, fatality, or serious damage to equipment) are required within 24 hours of receipt of the report.

In general, the assessment process provides a ‘most probable cause’ scenario, based on the information provided by the report, additional information obtained from discussions with the point of contact and witnesses, and a review of the following elements:

- ALN production data (specifications, waivers, deviations, engineering change proposals, Lot Acceptance Test data, component identification, etc);
- ALN and common component history (previous malfunctions, NARs, AINs, investigations, inspections, surveillance tests, etc), including the history of ‘sister ALNs and history data compiled by the other services;

- Current, reported inventory (locations, total item quantities at those locations, quantities compared to total net quantity produced, reported condition codes versus 'true' condition code).
- Current serviceable inventory of the DoDIC compared to the Total Munitions Requirement (TMR) and impact if a restriction or suspension is required.



#### **MK19 Damage from B542 in-bore detonation**

Some incidents require a more in-depth analysis to determine the cause of the malfunction and may include an on-site investigation, a formal investigation by MCPD, joined by the Army SMCA team or the Navy ISEA team.

These investigations can involve any one or more of the following:

- Inspection/analysis of evidence (weapon, ammo residue, firing position);
- Collection of individual, written witness interviews;
- Shipment of ammo samples for controlled, instrumented test firing;
- Systematic teardown of components and laboratory analysis;
- Computer simulation of failure;
- Material stress analysis; Chemical analysis; etc.

Actions resulting from the assessment of a Malfunction Report, and as directed by PM Ammo, will generally fall into one of the following categories:

- Retain ammo ALN in current C/C. No further action required;
- Restrict or suspend ammo ALN to appropriate C/C;
- Conduct an investigation, suspend ALN to CC-J; or
- Release ammo ALN to previous C/C.

If all the steps of the process are properly completed, an ASP that has locally suspended an ALN due to a malfunction should receive either a direction to release from PM Ammo or a NAR that restricts or suspends the ALN within thirty days of the local action. If neither of these occurs, it is a signal that some part of the process has broken and the ASP needs to contact PM Ammo for clarification/disposition... the sooner the better!



#### **B542 Round Detonated in Barrel Closing The Loop:**

The Inventory Accuracy Team receives Monthly Inventory Review Reports (MIRR) from the ASP's that lists among other things all ALNs that are in local suspension due to a malfunction. These reports are now forwarded to the Quality Assurance (QA) Specialist who reviews and compares them with active Malfunction Reports. If the MIRR lists an ALN in local suspension that doesn't have an active Malfunction report in the system the QA will contact the ASP to find

out the unit that experienced the malfunction and then contact the unit to ensure that they submit a Malfunction Report.

The case described at the beginning of this article points out that the Stockpile Review process may identify a problem, but more often than not, it will be many months/reporting cycles after the initiating incident occurred – making it difficult, if not impossible to obtain accurate information on the malfunction. In addition, a portion of the stockpile may be unnecessarily tagged as unserviceable. Hopefully with this new step in the process these problems will be a thing of the past.

When malfunctions or defects are discussed during ammunition turn-in, the Ammunition Technicians at the ASPs need to remind their Unit Ammunition Technicians counterparts that a Malfunction Report is required in accordance with MCO 8025.1 and encourage them to provide a copy to the ASP prior to submittal.

**GySgt Williams is currently assigned to the MCSC-PM Ammo as a Quality Assurance Specialist and Mr. Francis performs USMC Malfunction Assessments with MCPD**



## The Workhorse Lance Corporal

**WO Weppner, MCSC-PM Ammo-Systems Team**

There I was, Las Pulgas Ammunition Supply Point (ASP), LCpl Weppner fresh from Redstone Schools. I was being “briefed” by my senior LCpls (you know, the ones that have been a LCpl since GySgt

Hartman from “Full Metal Jacket” was a Pvt). They told me what it was like to be an ammo tech; “a LCpls job is not important”, “What we do here is not noticed”, “do the bare minimum to get by”, “we’re LCpls, we get paid to make mistakes.” I hope none of you have heard that, but the fact is some of you have.

Well if you haven’t learned by now, let me tell you that major decisions are made using the information gained from your daily work. How is that? You go to the ASP and do your daily pulls and turn-ins in the magazines, unless you are lucky enough to get place in records, then you just key punch all day. How could your work be affecting decisions all the way up at Marine Corps Systems Command (MARCORSYSCOM)? Let me start at the finish and reverse engineer it back to where you come in.

I’ll begin with the Knowledge Management Portal (KMP). The KMP is a repository for all types of ammunition information from Notice of Ammunition Reclassification (NARs) to procurement data to worldwide inventories). For a more in-depth article on the KMP, refer to “Ammunition Knowledge Management Portal News” by Mr. Rodriguez and Ms. Mendoza in the January 2004 issue of the Ammunition Quarterly (Vol 10, No 1). This website along with the PM-Ammo website make up the two of the main ways to get spun up on the world of Marine Corps Ammunition. That’s pretty interesting, but how is the KMP important? Commanders at ALL levels access the KMP to get the information they need to make decisions, both tactical and garrison. For the purpose of this article, I am going to use the example of an Assistant Program Manager (APM) at MARCORSYSCOM to show how the information can be utilized.



In the January 2004 issue of the Ammunition Quarterly (Vol 10, No 1), Captain Young wrote an outstanding article on the duties of an APM titled “Acquisition 101”. In it Captain Young describes how new types of ammunition make their way into the system and into the hands of the warfighter. What was not in there is the countless hours spent ensuring that the



types of ammunition that we already have don't fall below what is needed. To do this, the APM needs to constantly know what is currently in the ammo inventory (world -wide); the KMP is where he finds this information. So the KMP is the workhorse of the ammo community? No! Those inventories didn't just appear in the KMP.

Every day a file is automatically uploaded into the KMP with next to real time inventories. That file is generated from a system know as Marine Ammunition Accounting and Reporting System II (MAARS II). So now you where the inventories for ammo really come from, Mars! So, how do those numbers get into the MAARS II system? Martians? Well some might call the Marines in the Systems Team "Computer Geeks" but we're not Martians. Twice daily we compile the lists of all daily transactions from all units who hold Marine Corps ground ammunition. A program called Retail Ordnance Logistics Management System (ROLMS) generates these files. For those of you who don't understand what ROLMS is, you can read an excellent article titled "ROLMS Outside the Box" by GySgt Cleveland in the April 2003 issue of the Ammunition Quarterly (Vol 9, No 1). So it's ROLMS that is the hero? No, not ROLMS.

## ROLMS

Marines stationed all over the world send the ROLMS transactions daily to MARCORSYSCOM. All that key punching in the Records section, while very monotonous is what keeps the ROLMS program spitting out accurate numbers to MARCORSYSCOM.

But can Records take all the credit? I don't think so. Those numbers that Records type into ROLMS are coming from magazine inventories done by the Storage section, ammunition requests and turn in documents coming from supported units, and documents coming in with new shipments of ammo. All this information that is being generated at the lowest levels of the rank scale, is being used to feed into a system that is utilized by those all the way at the top of that same rank scale.

It's obvious to me that we owe a lot of gratitude to the LCpls, PFCs and Pvts in the magazines, up in Records and at supported unit, for the information that we have at the click of a button on the KMP. It's true about a chain being only as strong as its weakest link; you help keep our chain strong by all the work you put

into ensuring that the initial information this chain is based on is correct. We must not take any of this for granted and we must strive to give the utmost training and support to our young Marines who are shaping the ammunition community and Corps, because "a LCpls job is important", "what they do is noticed", "they do their utmost so we all succeed", "they're LCpls, they get paid to make things happen." I know this because "I was there".

**WO Weppner is currently assigned to the Systems Team at MCSC, PM-Ammo and may be reached at e-mail: [WeppnerWG@mcsc.usmc.mil](mailto:WeppnerWG@mcsc.usmc.mil)**

## "AmmoMail"

The Program Manager for Ammunition has re-established the "Ammo Mail" system, which is much like the existing "Marine Mail" system. The "Ammo Mail" system will serve as a medium for you to ask questions, send your thoughts, suggestions and recommendations on Ammunition related subjects to the staff at the Program Manager for Ammunition. This initiative is to focus attention to pertinent issues concerning the Ammunition Community. "AmmoMail" is a way to connect the "Ammunition Community" to improve the way we do business, to enhance communication among every member of the community, and to build a sense of connectivity that extends beyond geographic boundaries.

Send your questions, concerns and constructive criticism to [AmmoMail@mcsc.usmc.mil](mailto:AmmoMail@mcsc.usmc.mil) we will provide an answer with-in 30 days of receipt. Additionally we will post a limited amount of questions received in the upcoming Ammunition Quarterly with answers provided. Through your questions, your thoughts, and suggestions we receive, we will open another avenue to garner fresh ideas for continued improvements with-in the "Ammo Community" and enhance the way we do business.



## Marine Corps Ground Ammunition School

### FY 2004 MANAGERS COURSE DATES

**Class 002-04 @ Redstone Report Date 24 May 04, Grad Date 28 Jun 04.** The Ammunition Managers course includes the Explosive Safety for Navy Facility Planning Course (Ammo 36).

**Class 003-04 @ Redstone Report Date 23 Aug 04, Grad Date 27 Sep 04.** The Ammunition Managers course includes the Explosive Safety for Navy Facility Planning Course (Ammo 36).



### FY 2004 NCO MTT DATES

**Class 003-04 @ CLNC Report Date 21 Apr 04, Grad Date 19 May 04.** 25 school seats available for this class. The NCO MTT course includes the Naval Motor Vehicle and Railcar Inspection Course (Ammo 51).

**Class 004-04 @ CPCA Report Date 12 Jul 04, Grad Date 9 Aug 04.** 25 school seats available for this class. The NCO MTT course includes the Naval Motor Vehicle and Railcar Inspection Course (Ammo 51).

**Training Ammunition Management Information System - Redesigned (TAMIS-R)**  
 - TAMIS-R will serve as the Marine Corps standard for forecasting training ammunition at Marine Corps and Army facilities.  
 - TAMIS-R will fulfill the Statement of Annual Requirements (SOAR) requirement of the P4400.150 series.

## “Ammunition Quarterly”

The Ammunition Quarterly (AQ) provides a network and communications medium for the Marine Corps Ammunition Community to share information. It is your newsletter and your comments, suggestions or questions are welcome. As always this is the Ammunition Communities Newsletter and is intended to provide new and experienced Ammunition personnel with pertinent information. Produced quarterly the AQ is posted to the Program Manager for Ammunition Web Page, The Knowledge Management Portal and distributed by hard copy to select organizations lacking full IT capability. As well, our AQ is distributed widely throughout the USMC to include most General Officers.

The editorial staff invites authors to submit articles dealing with topics drawn from several areas’ pertaining to Ammunition. Articles may be on a wide array of issues and topics, including processes, analysis, evaluation, activity, success stories, research and ammunition safety. Have you found a way to do something smarter, faster or improve your activity? If so, the AQ is a forum in which you can share your successes with your counterparts throughout the Marine Corps. Ultimately, these shared ideas will improve our ability to rapidly get the steel on the target!

Make a commitment today and write an article to enhance the knowledge of the “Ammunition Community”. Challenge your Marines and Civilian counterparts to put pen to paper and be proactive with-in their community. Provided below are issues and deadlines for publication of your Ammunition Quarterly:

### Publication Schedule and Deadlines

Issue	Deadline
January 1	November 20
April 1	Feb 20
July 1	May 20
October 1	August 20